VOLUME XLIV NUMBER FIVE

# THE NATIONAL GEOGRAPHIC MAGAZINE

NOVEMBER, 1923

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TWENTY-FOUR PAGES IN FULL COLOR

The Story of the Horse

The Development of Man's Companion in War Camp, on Farm, in the Marts of Trade, and in the Field of Sports

With 60 Illustrations — WILLIAM HARDING CARTER, MAJOR GENERAL, U. S. A.

Horses of the World — EDWARD HERBERT MINER

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ARTICLES and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by an addressed return envelope and postage.

IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resultant given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

AT an expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization which was waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the historic expedition of Admiral Peary, who discovered the North Pole.

NOT long ago The Society granted $25,000, and in addition $75,000 was given by individual members through The Society to the Federal Government when the congressional appropriation for the purchase was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people and incorporated into a National Park.

THE Society is conducting extensive explorations and excavations in northwestern New Mexico, which was one of the most densely populated areas in North America before Columbus came, a region where prehistoric peoples lived in vast communal dwellings whose ruins are ranked second to none of ancient times in point of architecture, and whose customs, ceremonies and name have been engulfed in an oblivion more complete than any other people who left traces comparable to theirs.

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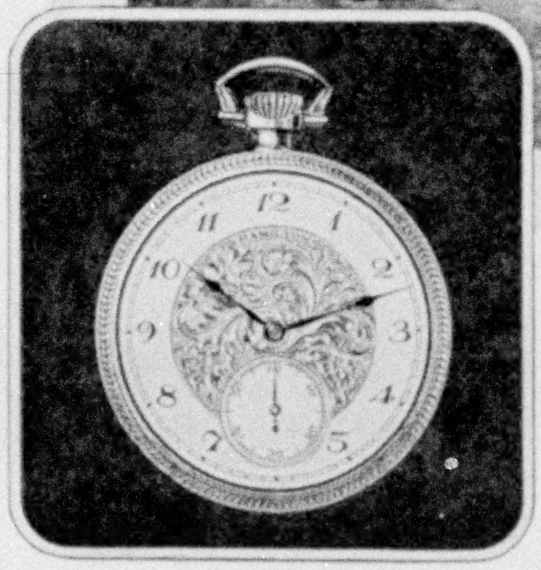


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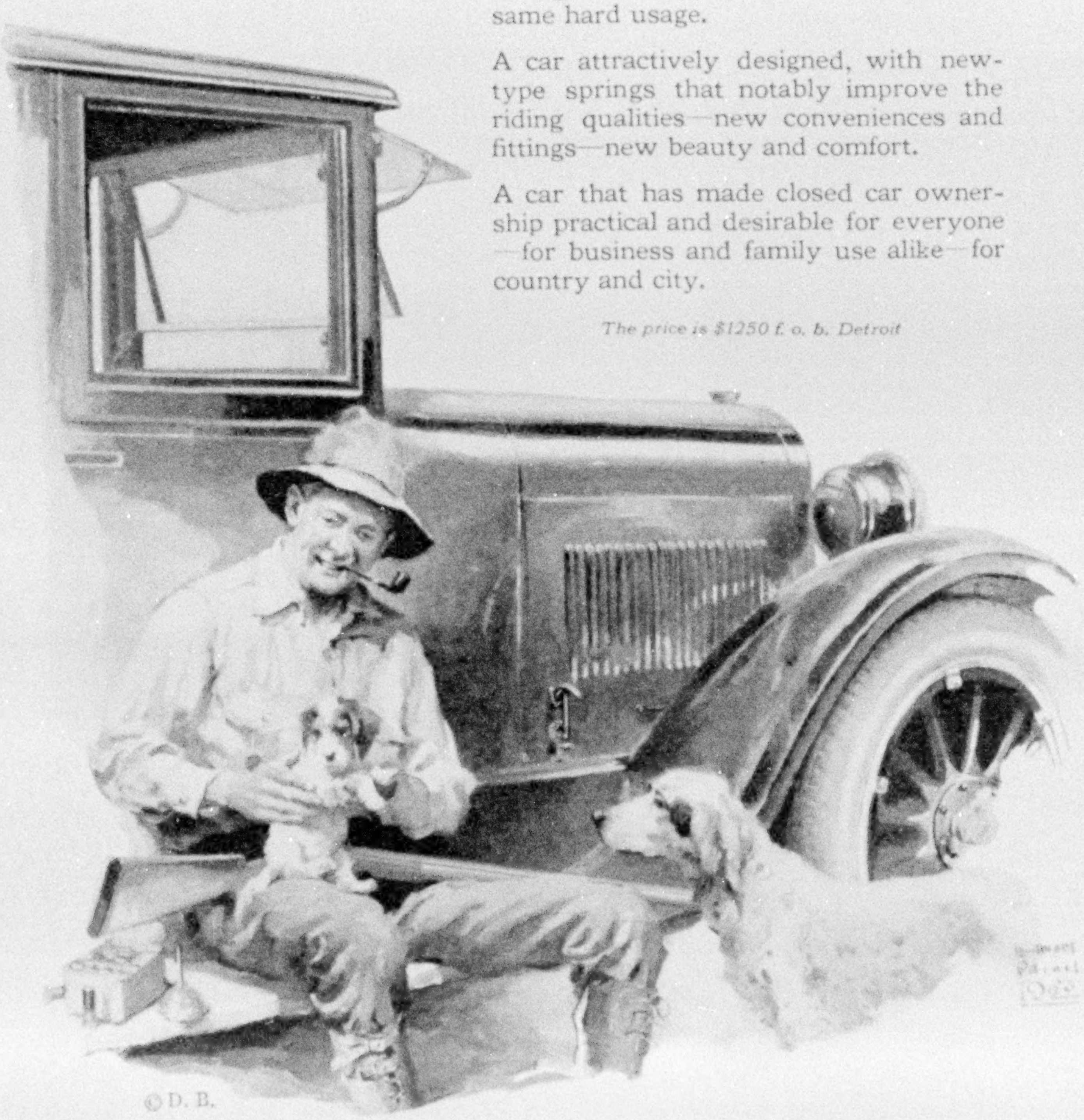

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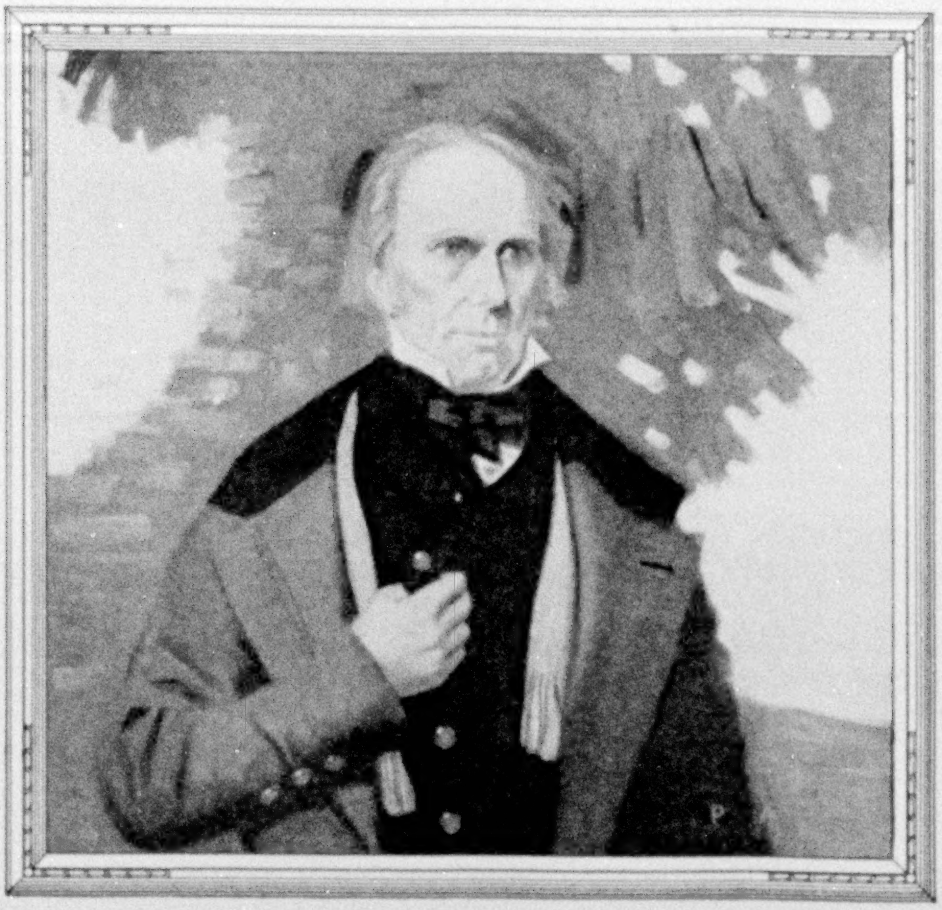
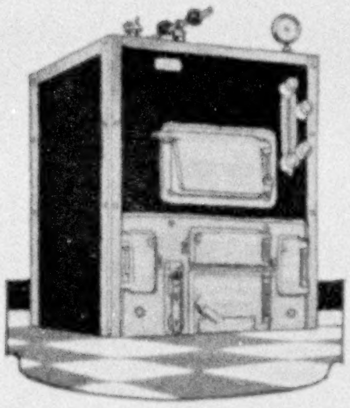
# AMERICAN IDEALS



*From a painting by* Herbert Paus © ARCO 1923

AMERICAN IDEAL RADIATORS BOILERS

## Henry Clay



We have forgotten the speeches which thrilled the men and women of his generation, but we shall always remember that he said: "I would rather be right than be president." Those eight words embody an Ideal of public service that we like to believe is characteristically American.

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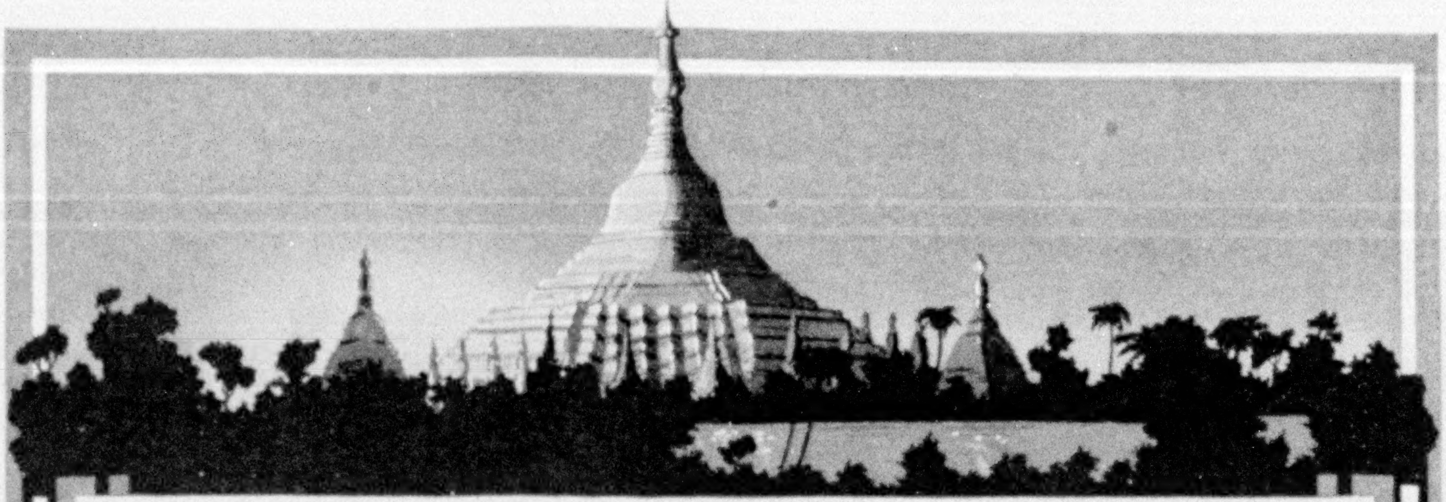

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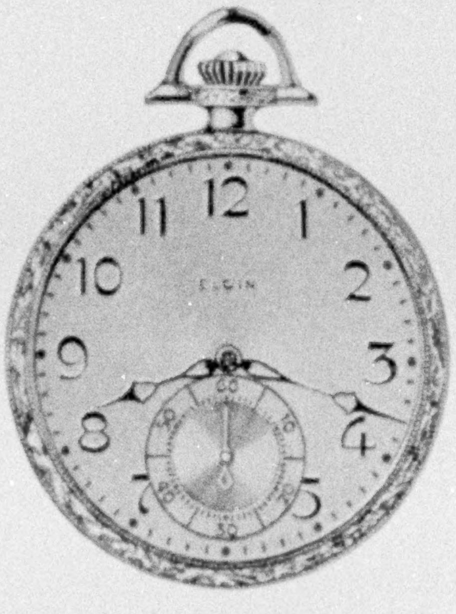
# Why the American temperament needs a watch like Elgin



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If the jeweler says that it might take a long time because a broken or worn part must be hand-made—

Or if the jeweler says that only a few models of this watch were made and he'll have to see if he can get the part from the factory—

The American temperament is put out.

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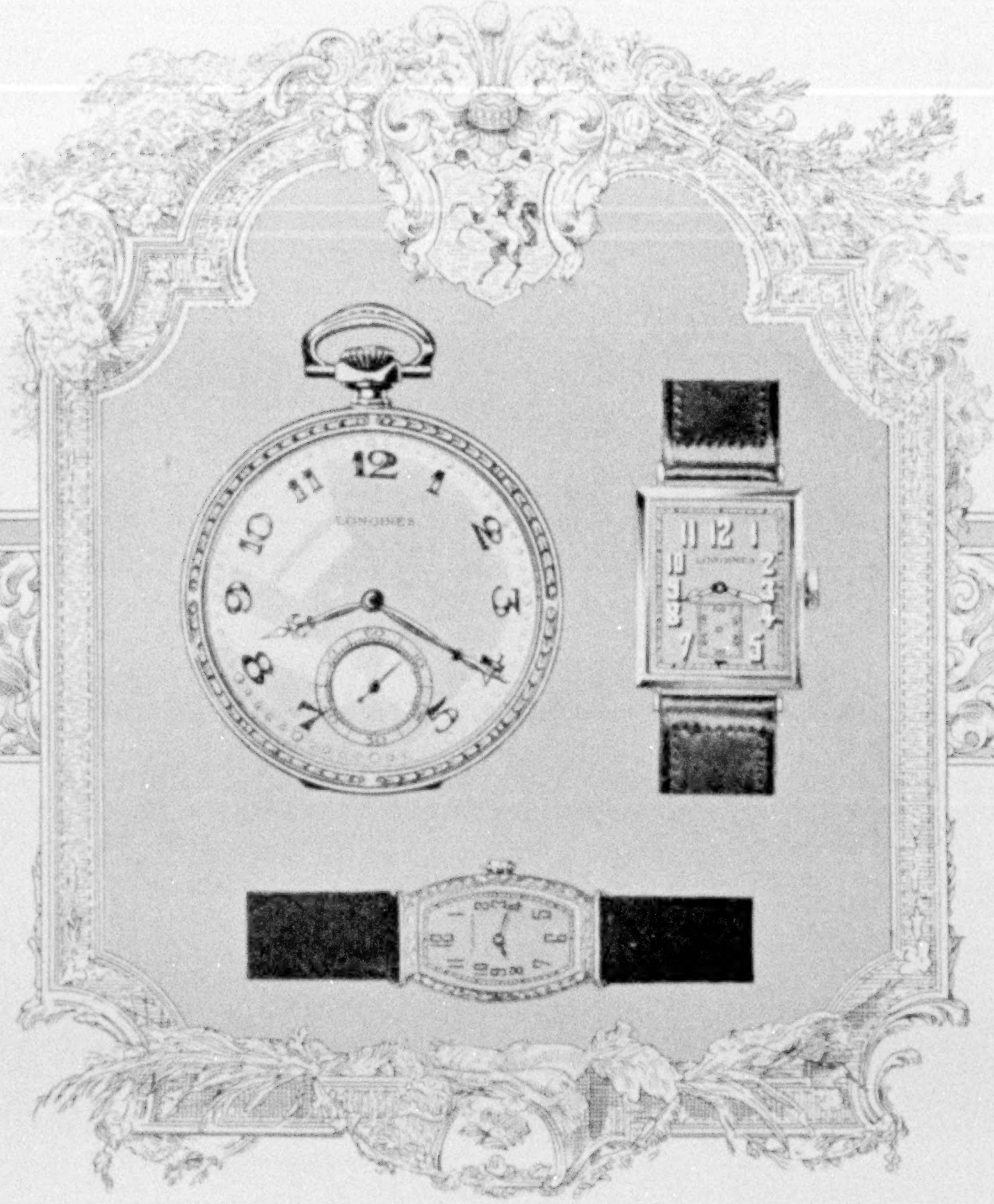



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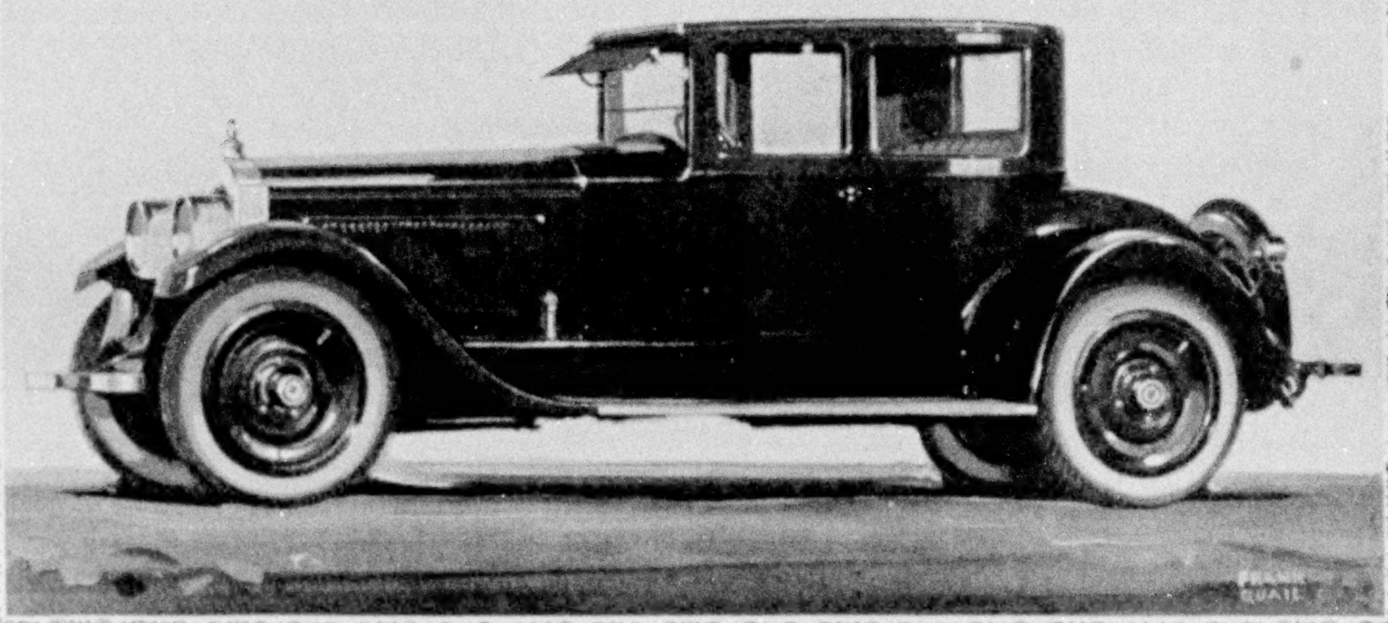

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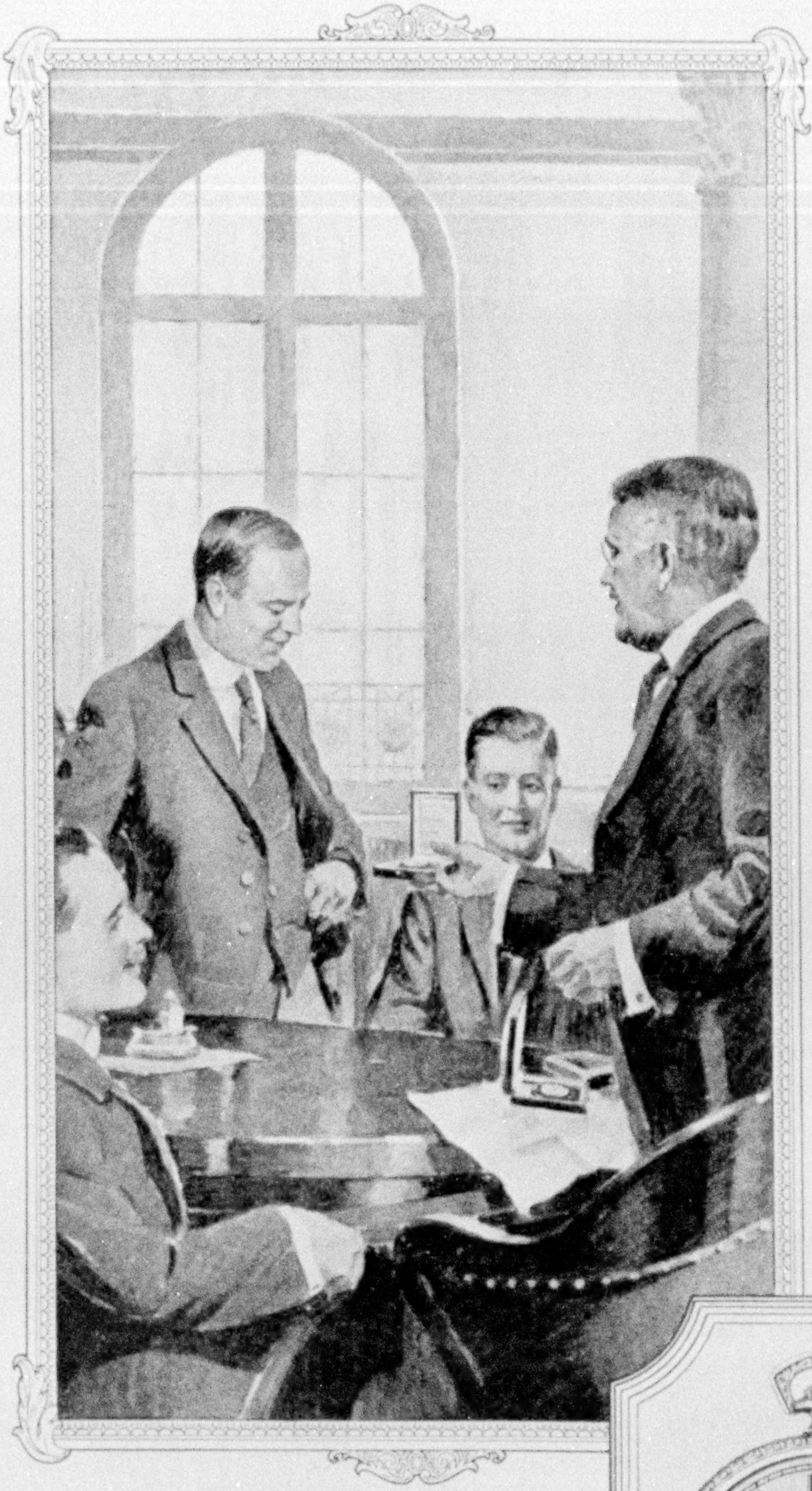

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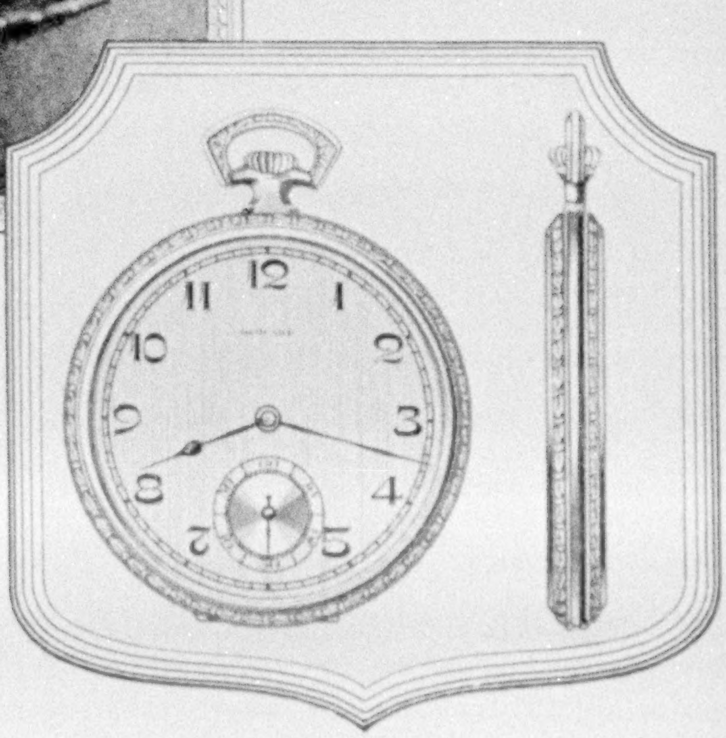

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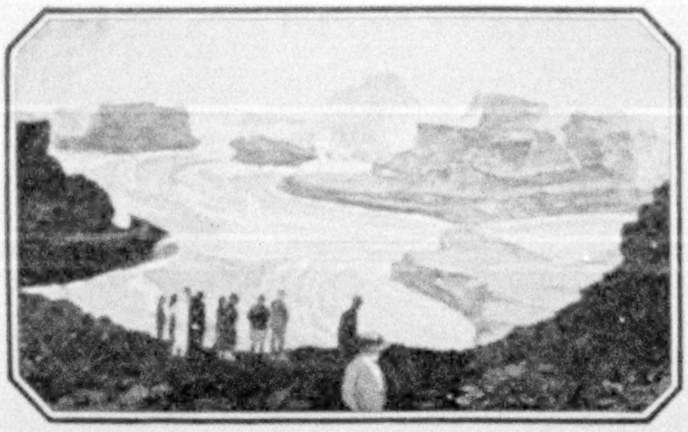

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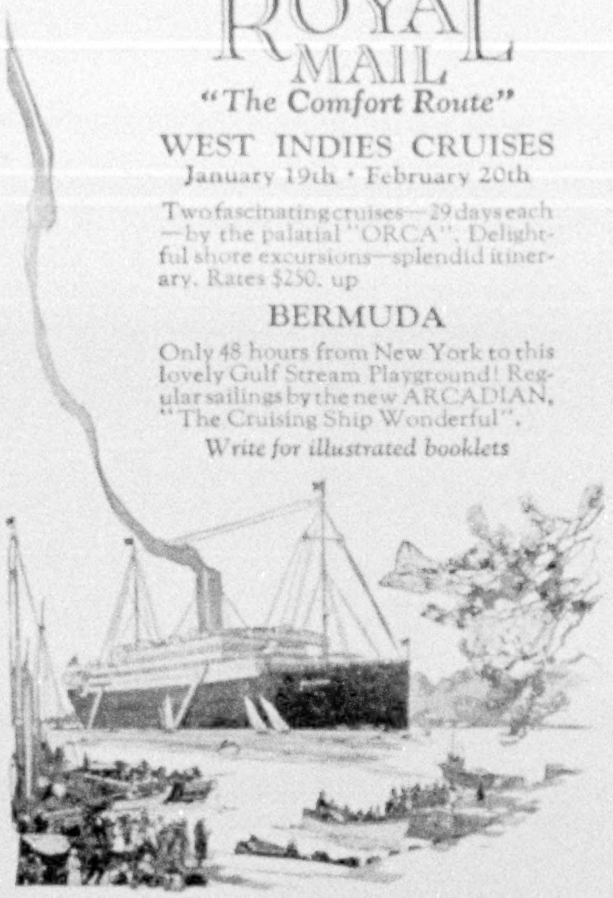

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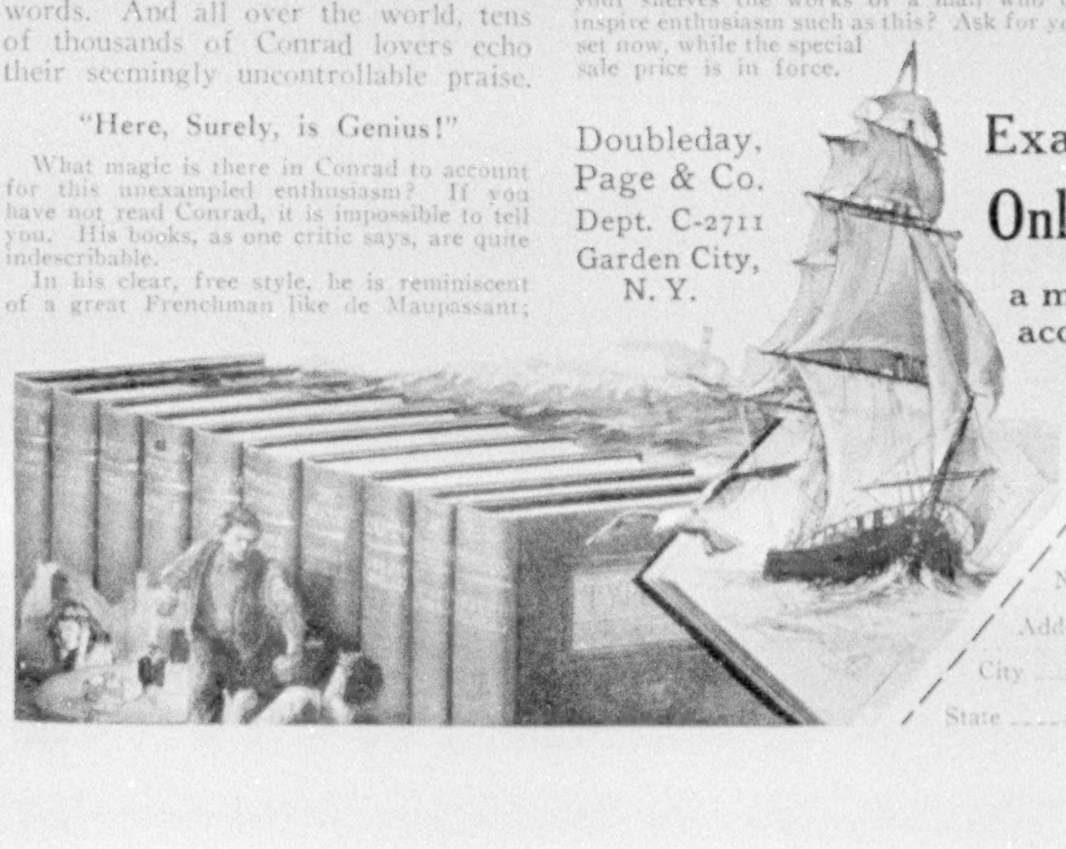

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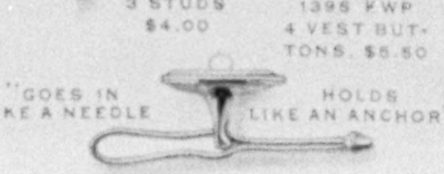


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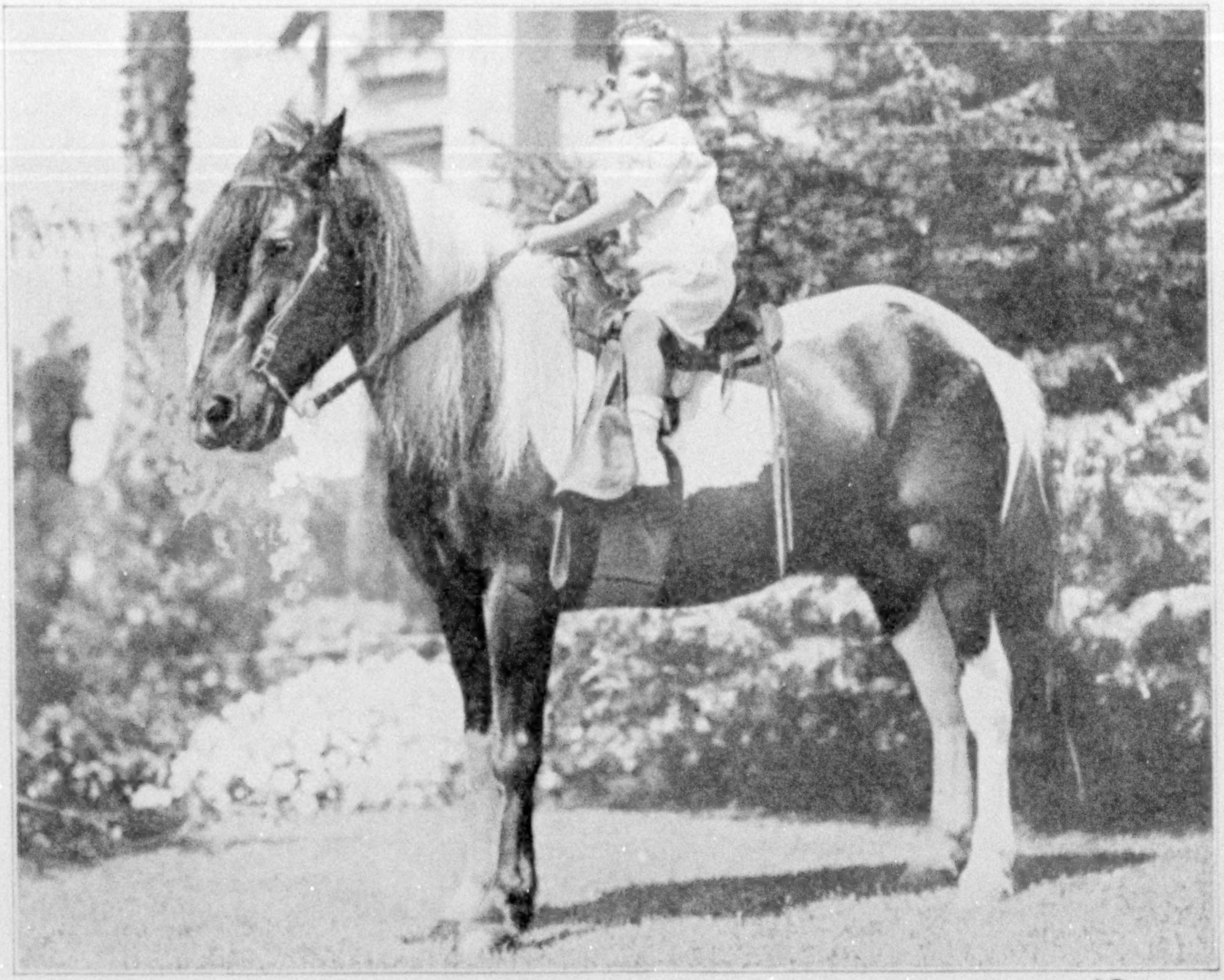

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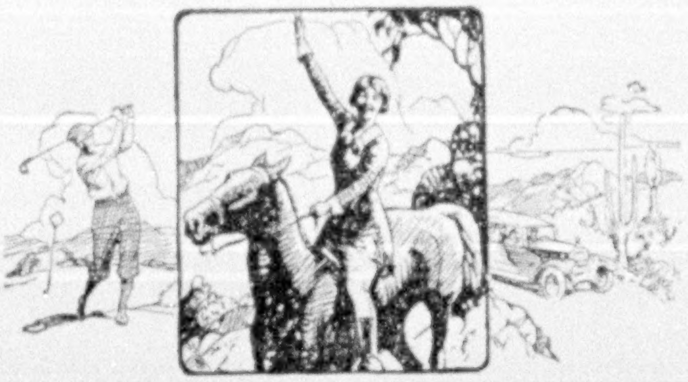

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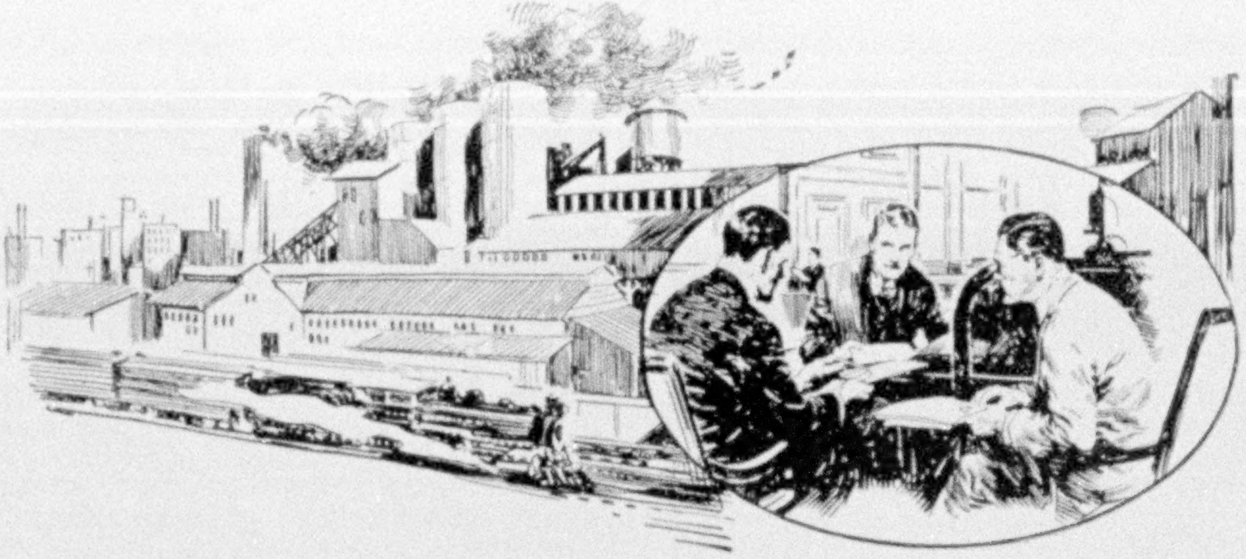

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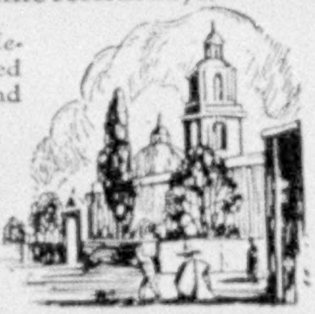

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# THE $100,000 WORTH OF BUSINESS WE FOUND HIDING IN OUR CARD FILES

*A Salesmanager's Experience with a Remarkable and Simple Method of Multiplying the Business from any Given Number of Accounts.*

AS a salesmanager, I know full well that it's not always the getting of new accounts that builds up a business, but the *working* of the accounts you have. Therefore I've always made it a point to keep as well informed as I could on customer activity. What each customer was doing, what and how much he was buying from us, whether his orders were increasing or decreasing—these and a half a dozen other points I found decidedly advantageous to have at hand for the purpose of intelligent sales work. In fact, I was so strong for the recording of this information that I took it upon myself to design a special card for our customer files.

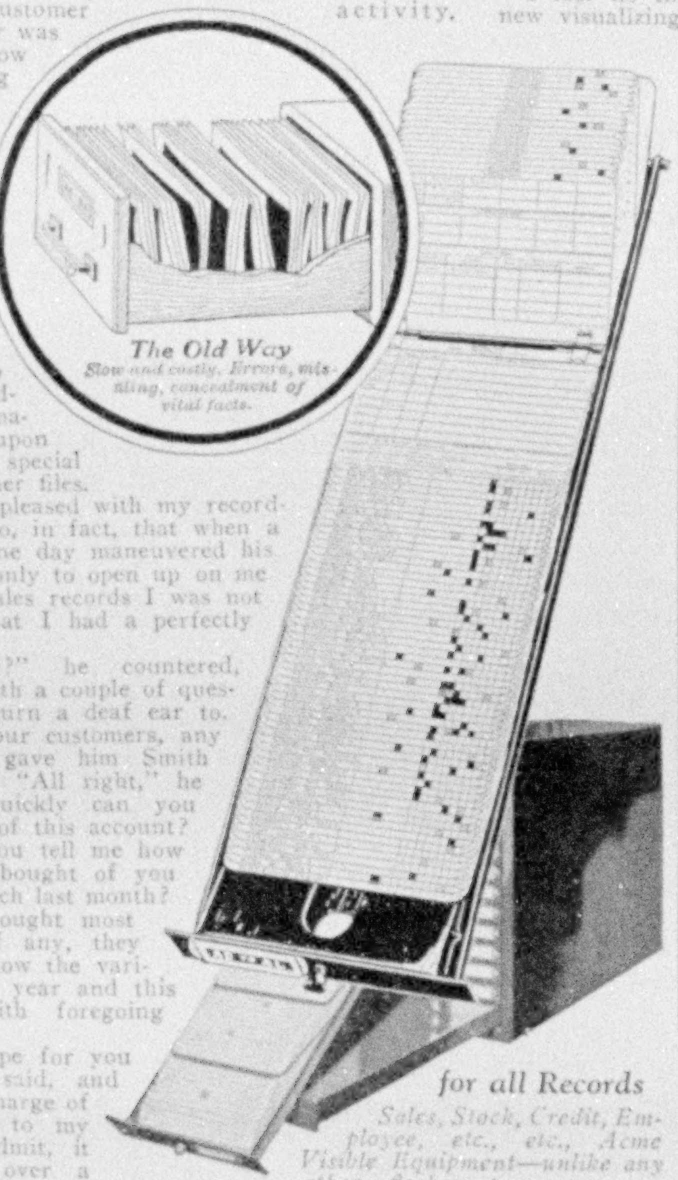
I was quite well pleased with my record-keeping—so much so, in fact, that when a certain gentleman one day maneuvered his way into my office only to open up on me on the subject of sales records I was not slow to tell him that I had a perfectly satisfactory system.

"But *have* you?" he countered, quickly following with a couple of questions I could not turn a deaf ear to.

"Name one of your customers, any one," he said. I gave him Smith Bros., of Oshkosh. "All right," he continued, "how quickly can you give me the status of this account? How quickly can you tell me how much Smith Bros. bought of you last year? How much last month? What items they bought most of? What item, if any, they bought none of? How the various figures for this year and this month compare with foregoing periods?"

"I'll have the dope for you in a minute," I said, and called the lady in charge of the records. But, to my discomfiture, I'll admit, it took considerably over a minute to locate the card—and when I did get the card I was astonished with the facts it presented. *We hadn't sold Smith Bros. a dime's worth of goods in three months, and we should be making regular monthly sales and deliveries!*

"Here is the trouble," said my friend not unkindly, "your records *hide* the very facts you want constantly flashed before your eyes." How much other information of vital value do you suppose we concealed in those drawers? Then he proceeded to show me the difference in another way of record-keeping.



**The Old Way**
*Slow and costly. Errors, misfiling, concealment of vital facts.*

*for all Records*

*Sales, Stock, Credit, Employee, etc., etc., Acme Visible Equipment—unlike any other—flashes to your eye, your sales conditions, stock conditions, credit data, employee records,—flagging your attention to the things that need your attention. They cut costs and add to profits.*

"Just try this new method out for a while and see how much business you've been losing," he said. I could see from the very first that his method was the one for efficiency.

Every card was in sight—within 3 seconds of your finger tips. Everything pertaining to customer and sales activity was visualized before me—my eye flagged automatically to the facts needing attention. In short, a bird's-eye view of every factor of my sales work.

I lost no time in transferring all my records to this new visualizing equipment, and the results were nothing short of amazing. We cut our record-keeping costs two-thirds. We added at least 25 per cent to the efficiency of our sales work. In fact, I'm willing to state that we got at least $100,000 worth of business out of our accounts we would never have gotten under the old system of record-keeping. This Acme System, as it's called, permits intensive sales work that is not possible under any other method of record-booking I've ever seen. That in itself is worth a lot.

## The New Way
### The Acme Way

1. Every card in sight (overlapping arrangements).
2. Within 3 seconds of your finger-tips.
3. Write on either side of card without removal from File.
4. If removed, cannot be mis-filed (errors entirely avoided).
5. Your entire business visualized before you.
6. Your file clerks' capacity tripled (two-thirds of the payroll saved).
7. Your present card records easily transferred to Acme Equipment.
8. Simple color signal systems flag your eye to conditions needing attention.

## Make This Efficiency Test *of* Your Records

How about your records? We have an interesting test you can apply to your sales records, stock records, credit records, employee records, in fact to any sort of records, that show you in a few minutes just how efficient your particular record-keeping is. This test is sent prepaid and free with a copy of our catalog describing ACME VISIBLE RECORD EQUIPMENT in full. Your name and address in the coupon below will bring you this information.

# ACME
## VISIBLE CARD SYSTEM

*The Highest Advancement in Record-Keeping*

**The Acme Card System Co.**
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NG-1123

ACME CARD SYSTEM CO.
114 South Michigan Avenue, Chicago, Ill.

— Please send us your test of record-keeping efficiency and your catalog.

— Please have representative call.

Name..............................

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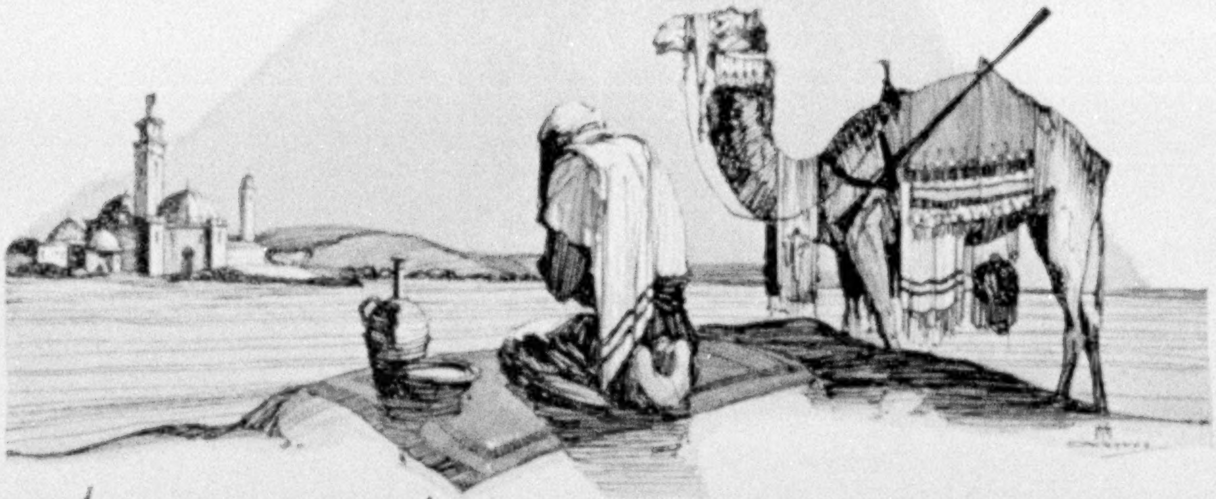

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## a day from France

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In flower-decked gardens feathered minstrels carol the year around. The serenity of the calm, wise-eyed East envelops and rests you as you explore oriental Algiers, Tunis, Fez, Biskra, and visit destroyed Carthage and wonderful, ruinous Roman cities.

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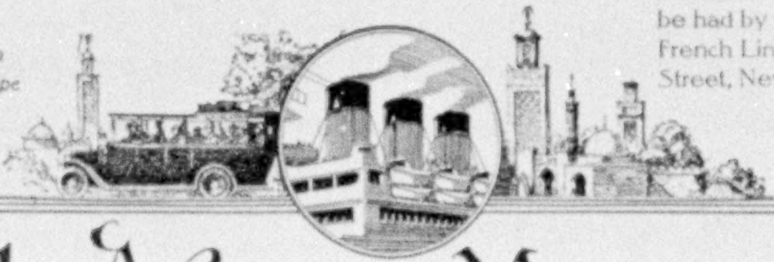
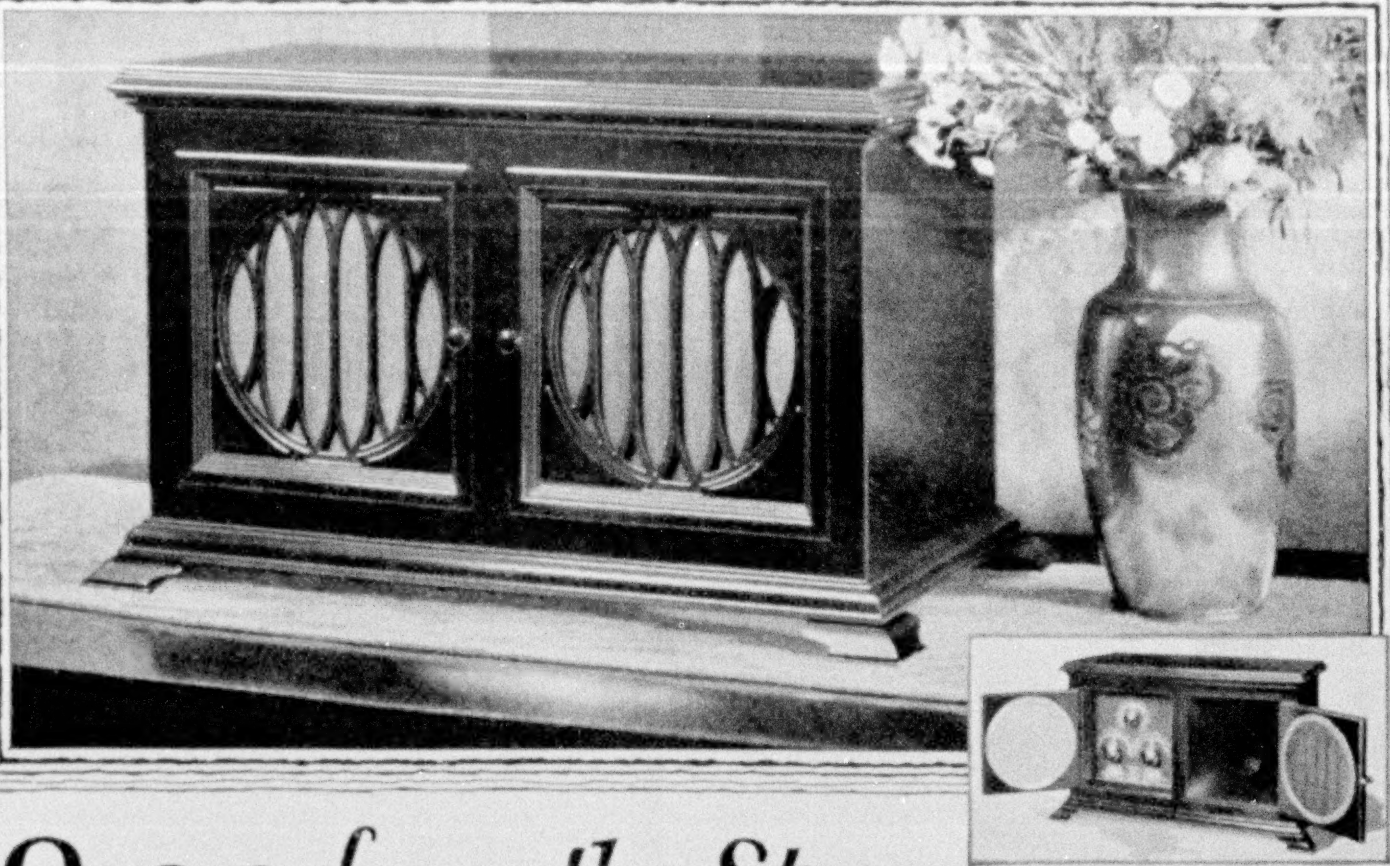
Extremely interesting literature further detailing these tours may be had by writing to the nearest French Line office—or 19 State Street, New York.



## North African Motor Tours
### Morocco - Algeria - Tunisia



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*A long distance receiver made with the perfection for which RCA is famous. Mahogany finished cabinet; with four tubes (one spare); head phones and plug; silk covered wires.* $275
*At the nearest radio or electrical dealer.*

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Tune in—then shut the doors. Sit back and listen to the music that's being sung a hundred miles away. Dance to fine orchestras playing in the big cities. Call in the crowd when the big game is on. It's real!

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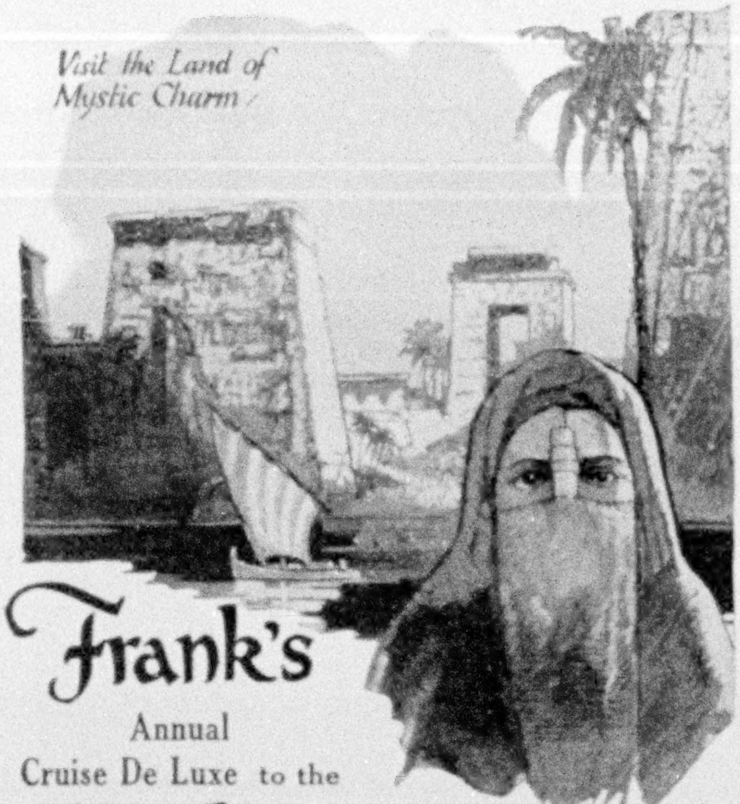


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Sailing January 30, 1924, 67 Days

Repeating the complete success of the 1923 similar Cruise, same steamer, visiting

## Egypt—Palestine

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The "Scythia" is a veritable floating palace, with spacious decks, lounges, veranda cafes, 2 elevators, gymnasium, commodious staterooms with running water and large wardrobes; bedrooms and suites with private baths. The famous Cunard cuisine and service. (Only one sitting for meals.)

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Rates, deck plans, itinerary and full information on request. Early reservation insures choice of location.

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From New York—Jan. 8
**S. S. RELIANCE**

Write for the West Indies Cruise booklet "A" and full information.

**UNITED AMERICAN LINES**
(HARRIMAN LINE)
39 Broadway, New York
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Or local steamship agents

# No More Diphtheria

NOT so many years ago Diphtheria was the black enemy of childhood. All over the world it claimed a frightful toll. And the tragedy was that three-quarters of its victims were little tots under six—hardly more than babies. Swiftly it struck with deadly result—*without warning*—and there was no sure way to combat it.

Then came Antitoxin. Children who received this treatment at once enjoyed a better chance in their struggle for life. And the Diphtheria death rate was lowered. But Antitoxin is effective only after Diphtheria develops. It *checks* the progress of the disease—but it does not give lasting protection. Now comes a great triumph of medical science—the Prevention of Diphtheria!

Today, eminent specialists state positively and definitely that through modern preventive treatment—

## *Diphtheria can be Stamped Out!*

Some children are able to resist the germs of Diphtheria. Others are not. The wonderful discovery of Dr. Schick of Vienna, is now being used to show which children need protection—which are susceptible and which are not. The Schick Test consists in giving the child a tiny injection in the skin of the arm. If, after a few days, a red spot appears where the injection was made, the child is susceptible. If no spot appears, the child is immune.

Children who show by the Schick Test that they are liable to Diphtheria can be given at once the Toxin-Antitoxin Preventive Treatment. This treatment consists of three injections of Toxin-Antitoxin, one each week for three weeks.

The Schick *Test* does not make the child immune—but authorities agree that the Toxin-Antitoxin *Treatment* does. Experience shows that both test and treatment are painless and harmless.

## *If you love them—Make them safe*

Experienced Health Boards urge that you take your children at once to a physician and have them protected from this deadly scourge by means of the Toxin-Antitoxin Treatment. The people who are introducing the Schick Test into the public schools need your heartiest co-operation. If your child brings home a request for your approval for the Test or the Toxin-Antitoxin treatment, do not hesitate to give permission.

Thirty years ago, 115 out of every 100,000 persons died of Diphtheria each year. In recent years, the number has been 15 per 100,000. But, even at this low figure, there are more than 15,000 deaths from Diphtheria annually in the United States.

The Metropolitan Life Insurance Company is making every effort to teach mothers that this disease is entirely preventable and urges them, as well as others in charge of children, to take no chances with Diphtheria.

As a result of the educational campaign among its policyholders, there has been a very marked decline in the death rate from Diphtheria among children insured in the Company. Between 1911 and 1922, the rate declined 34.1 per cent. It is still lower so far in 1923.

The Metropolitan Life Insurance Company will gladly mail a leaflet entitled "Diphtheria and Its Prevention" to any one interested.

HALEY FISKE, *President.*

*Published by*

METROPOLITAN LIFE INSURANCE COMPANY—NEW YORK

*Biggest in the World, More Assets, More Policyholders, More Insurance in force, More new Insurance each year*

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CHALIAPIN — Victor Artist

The same high standard which Chaliapin maintains in his public performances, he also demands for his record "appearances"—and his interpretations are given adequate expression only through the medium of the Victrola and Victor Records. Among the fourteen records he has made are:

| | Double-faced | |
|---|---|---|
| Song of the Volga Boatmen / The Prophet | 6058 | $2.00 |
| Two Grenadiers / Midnight Review | 6057 | 2.00 |

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JERITZA — Victor Artist

One of the greatest artists in the world today—and her Victor Records are equally great. To hear Jeritza on the Victrola is both to appreciate her art and to know why she chose the Victor to reproduce it. Her repertoire includes:

| | Double-faced | |
|---|---|---|
| Lohengrin—Elsas Traum / Tannhauser—Elisabeths Gebet | 6172 | $2.00 |
| Tosca—Vissi d'arte / Cavalleria Rusticana—Voi lo sapete | 687 | 1.50 |

© Mishkin

SCOTTI — Victor Artist

Scotti's reputation as one of the most gifted artists of the Metropolitan Opera Company is amply attested by his Victor Records. They are Scotti to the very life—approved by Scotti himself. Some of his nineteen records are listed below:

| | Double-faced | |
|---|---|---|
| Don Giovanni—Serenata (2) Falstaff—Quand' ero paggio / Otello—Brindisi | 6283 | $2.00 |
| Maria, Mari / Pagliacci—Prologo | 6282 | 2.00 |
| Forza del Destino—Solenne in quest' ora (with Caruso) / Bohême—Ah, Mimi, tu piu (with Caruso) | 8000 | 2.50 |

Victrola No. 400
Spring motor, $250
Electric, $290
Mahogany
Other styles $25 to $1500

Because the Victor Company was the first to offer the public high-class music by great artists, many people suppose it long ago secured control by contract of the best talent.

This is not the fact.

With but few exceptions, Victor contracts with artists are for short periods and in most cases they have been renewed several times. Less than half a dozen life contracts have been made and all at the earnest request of the artists.

Victor Quality is no idle slogan.

To be sure of Victor Products see the following trademarks—under the lid of every instrument and on the label of every record.

"HIS MASTER'S VOICE"

# Victrola

Look under the lid and on the labels for these Victor trade-marks

Victor Talking Machine Company, Camden, N. J.

VOL. XLIV, No. 5 WASHINGTON NOVEMBER, 1923

THE NATIONAL GEOGRAPHIC MAGAZINE

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# THE STORY OF THE HORSE

## The Development of Man's Companion in War Camp, on Farm, in the Marts of Trade, and in the Field of Sports

BY MAJOR GENERAL WILLIAM HARDING CARTER, U. S. A.

AUTHOR OF "HORSES, SADDLES AND BRIDLES," "LIFE OF LIEUTENANT GENERAL CHAFFEE," "THE HISTORY OF THE SIXTH CAVALRY," "THE AMERICAN ARMY," ETC.

PAINTINGS BY EDWARD HERBERT MINER

CASUAL observation of American cities, with streets overcrowded with motor vehicles, tends to create the impression that this is a horseless age, and that under existing conditions that useful animal is doomed to disappear.

Statistics, based upon the census, show, however, that while the normal rate of increase has not been maintained, there are nearly 300,000 more horses in the country than there were 20 years ago, and that the number of mules has increased by 2,370,000 during the same period, notwithstanding the fact that during the World War, between 1915 and 1918, there were shipped abroad more than 950,000 horses and 345,000 mules.

These facts would seem to indicate that the doom of the horse has not yet been sealed, and that he will continue to abide with us, not only because he is useful, but because from time immemorial he has earned and held the affection of mankind.

If the literature of a subject is an indication of public interest, then the horse truly ranks high, for it has been estimated that more than 2,000 books relating to this animal have been published in England and an equal number elsewhere. No special effort has been made by the Library of Congress to collect books on the horse, for the reason that other government agencies specialize on that subject; yet there are deposited in the Library nearly 1,000 volumes devoted exclusively to the horse, while the number containing references to it is countless.

### THE MILITARY HERO AND HIS HORSE ARE INSEPARABLE IN SCULPTURE

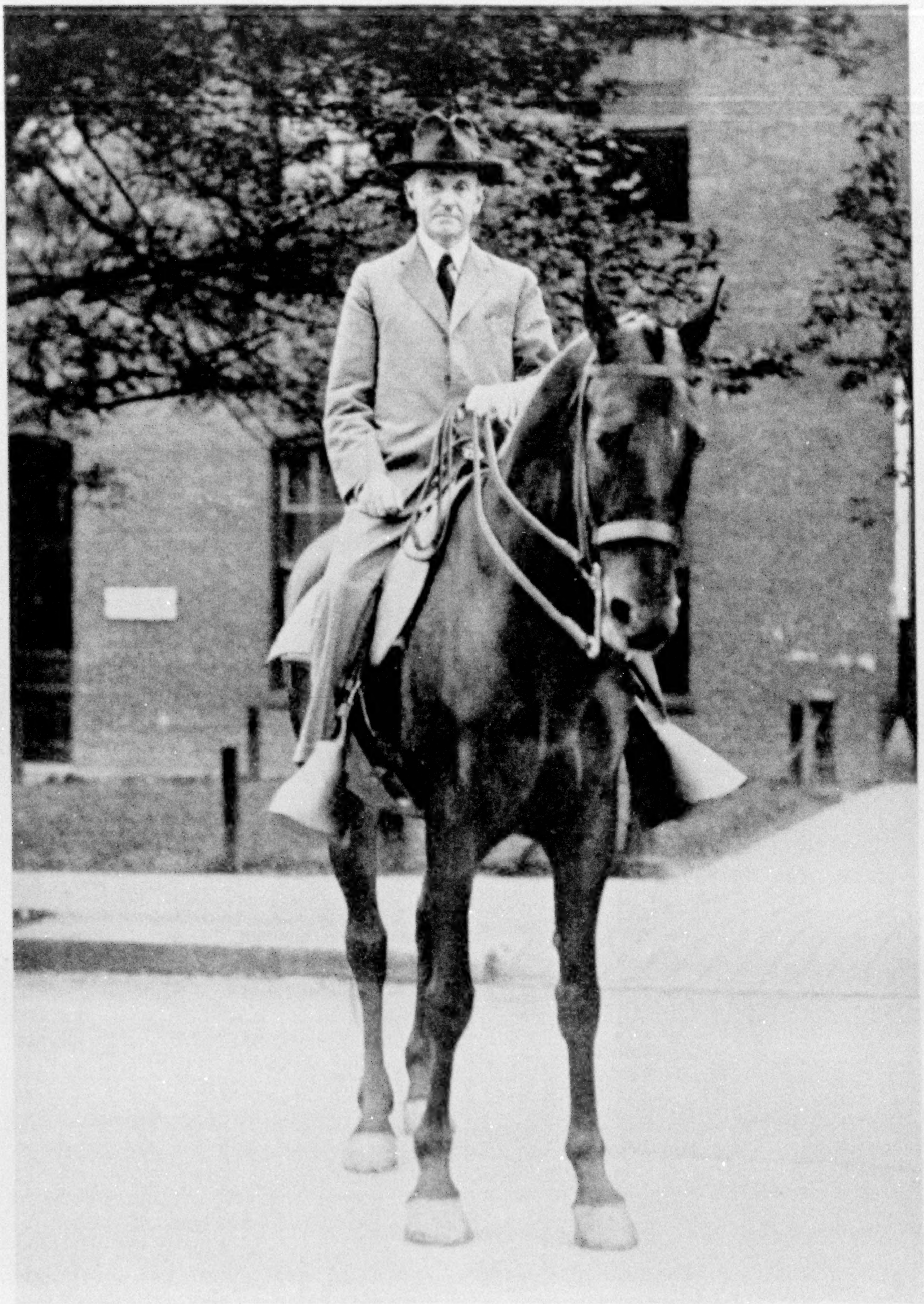
History would lose much of its charm if the deeds of the horsemen of all ages were eliminated. Coming down the centuries, the history of which has been embellished with the recital of the deeds of ancient warriors, crusaders, and knights errant, we find General Allenby, with his clouds of horsemen, in the World War, fighting on the same fields as of old, and using the Bible for military information in the theaters of operations as well as for spiritual guidance.

The deeds of great warriors have ever been perpetuated in marble or bronze, and in the course of time doubtless Allenby will be duly honored. It is inconceivable that a great military leader should be

Photograph of H. E. Talbott, Jr.

A CENTAUR OF THE POLO FIELD

Both America and Great Britain encourage polo, football, and other sports among their armed services, being mindful of Wellington's aphorism, that the battle of Waterloo was won on the cricket fields of Eton.

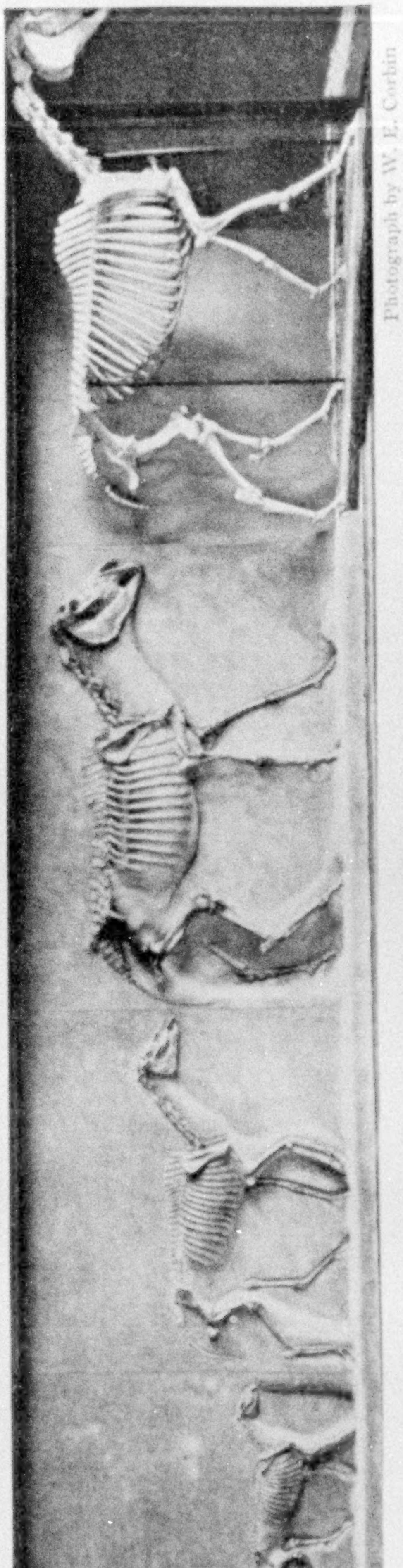


© National Photo Co.

PRESIDENT COOLIDGE ON "GENERAL," A STANDARD-BRED MOUNT

Until the advent of President Coolidge, the White House had not had an enthusiastic equestrian since the days of Roosevelt. President Taft, President Wilson, and President Harding all preferred the motor car to the horse for recreational rides.

XUM



Photograph by W. E. Corbin

HOW THE HORSE HAS GROWN IN THE LAST SIX MILLION YEARS

Amherst College science laboratory, Amherst, Mass., houses one of the most interesting exhibits in the world, showing the development of the horse through the various geologic ages, the last to complete the series having been added during 1920, from the Bad Lands of South Dakota. The tiny Eohippus, only 11 inches high, has four toes on his front feet and three and a fraction of a fourth on his hind feet. The second horse has three toes, all touching the ground when he walked, and is about as large as a Collie dog. Number 3 has toes, but the side ones do not touch the ground; the fourth has lost his side toes during the process of development and has only a "splint" remaining to represent the instep portion of the toes. The fifth and largest skeleton is that of the horse of to-day.

sculptured otherwise than upon his favorite charger. To do differently would break the spell of a thousand years.

In modern war, generals are enabled to command armies of incredible size by utilizing automobiles, telephones, and telegraph wires; but when it comes to actual leadership of units in open warfare, the commander must have his horse at hand.

When some future Congress shall decree that a statue of General Pershing, the only American who ever commanded a million men in battle, shall be erected in the Capital of the Nation, it is impossible that a sculptor should think of representing him seated at a telephone or in an automobile.

FAMOUS HORSES OF GREAT GENERALS

The celebrity that has attended the horses of all ages which have carried successful generals in battle has led to their selection as models by artists and sculptors, but unhappily monuments are rarely erected until long after the generals and their horses have passed to the Great Beyond.

Many horses of military leaders, such as Bucephalus, the charger of Alexander the Great; Marengo, the famous horse of Napoleon, and Copenhagen, the favorite mount of the Duke of Wellington, are well known to history.

America is not lacking in historic horses. Every schoolboy is familiar with the picture of General Israel Putnam, on his favorite horse, galloping madly down a long flight of steps to escape the British dragoons, who had closed all other avenues of escape. The picture of Washington on his handsome charger, Nelson, receiving the surrender of Cornwallis' army at Yorktown, has brought the glow of pride to generations of Americans. Three-quarters of a century ago it was wholly improbable that any discussion of the campaigns in Mexico could take place without some mention of General Zachary Taylor's well-known horse, Old Whitey.

The Civil War was replete with interest in the favorite horses of the great commanders.

General Ulysses Grant's military career was wholly devoid of theatrical display, but he was generally recognized as a fine horseman, and the men of the western armies always manifested interest when he rode among them.

GRANT'S LETTER CONCERNING HIS HORSE JACK

The writer recently had the good fortune to find a book on the horses of the Sahara, which had belonged to General Grant, and discovered, pasted in it, a copy of a letter written by him to the wife of General Sherman, who was assisting at a fair to raise funds for the sick and disabled soldiers discharged at the close of the Civil War. It was publicly announced that the purchaser of the famous horse mentioned in General Grant's letter should also become the owner of the autograph letter, which was as follows:

"Washington, D. C., May 31, 1865.

"Mrs. Ellen E. Sherman.

"Dear Madam:

"As a slight testimonial of the interest I feel in the great Northwestern Fair, now being held in Chicago, for the benefit of sick and disabled soldiers, who have endured so much for the maintenance of our government, permit me, through your agency, to present to this loyal and charitable enterprise the horse 'Jack,' well known in the western armies. I left Illinois on him in July, 1851, when commanding the Twenty-first Regiment of volunteer infantry, of that State. I rode this horse more than all others put together, from the time of leaving Springfield, on the 3d of July, 1861, until called east in March, 1864.

"On my promotion to the command of the armies of the United States, I left 'Jack' in the West, latterly with J. R. Jones, United States Marshal for the Northern District of Illinois, residence Chicago. Mr. Jones has been directed to deliver the horse to your order.

"If I was not deceived in the purchase of 'Jack,' he is now eleven years old. He is a very fine saddle horse, very gentle in harness, but requires whip and spur.

"Hoping that the fair will realize the full expectations of loyal people, and do credit to the great and growing Northwest, where it is being held,

"I remain, very truly, your obedient servant,

"U. S. Grant,

*"Lieutenant-General."*

When, after four years of grueling war, the curtain fell on the Lost Cause, and General Robert E. Lee slowly guided his splendid war horse Traveler from the fateful field of Appomattox, there was graven a picture in the heart of every red-blooded soldier, no matter under which flag he had fought.

THE EPISODE OF TWO BROTHERS WHO RODE AWAY TO FIGHT

Virginians were ever horsemen, and when the fratricidal war began, two brothers rode forth grimly to fight for the right as each saw it. The one, General William R. Terrill, a graduate of West Point, who declined to follow his State in secession, was killed while leading his Federal brigade at the battle of Perryville, Kentucky; his brother, General James B. Terrill, was killed while leading his Confederate brigade at the battle of Bethesda Church, Virginia. When the Civil War had closed, the heart-broken father brought the bodies of his two sons to their old Virginia home and buried them in the same grave. The story of how brave men rode to their deaths for principle, as each one viewed it, is briefly told in the inscription on the stone placed to mark the grave:

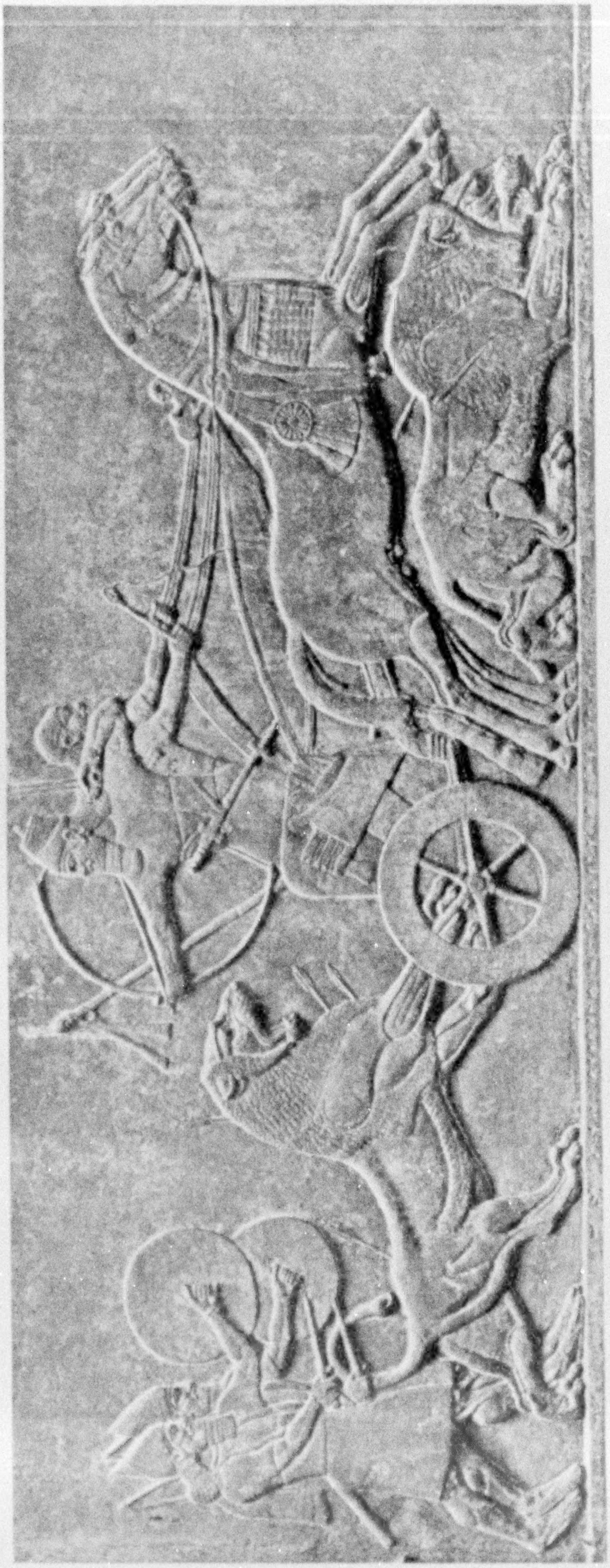
"This monument erected by their father. God alone knows which was right."

The poet, T. Buchanan Read, immortalized in verse the splendid war horse of General Philip Sheridan, which carried him into the battle of Cedar Creek from Winchester, twenty miles away. When this famous horse died his skin was mounted and is still preserved. While not so imperishable as bronze or marble, the mind may conceive a more correct impression of General Sheridan on horseback than is possible from an examination of his representation in bronze.

WILD HORSES DISAPPEARED FROM AMERICA BEFORE COLUMBUS ARRIVED

The history of the horse and the gradual development of the types now known have long been subjects of painstaking study by trained investigators, and some of their researches may be profitably reviewed.

With centuries of confusion among those that have passed since the dawn of history, it is not strange that some threads of information should be missing, but rather that so much has been preserved concerning the horse.



BAS-RELIEF OF KING ASSURBANIPAL HUNTING THE LION: AN ANCIENT ASSYRIAN SCULPTOR'S CONCEPTION OF THE HORSE AT THE GALLOP (SEE TEXT, PAGE 563)

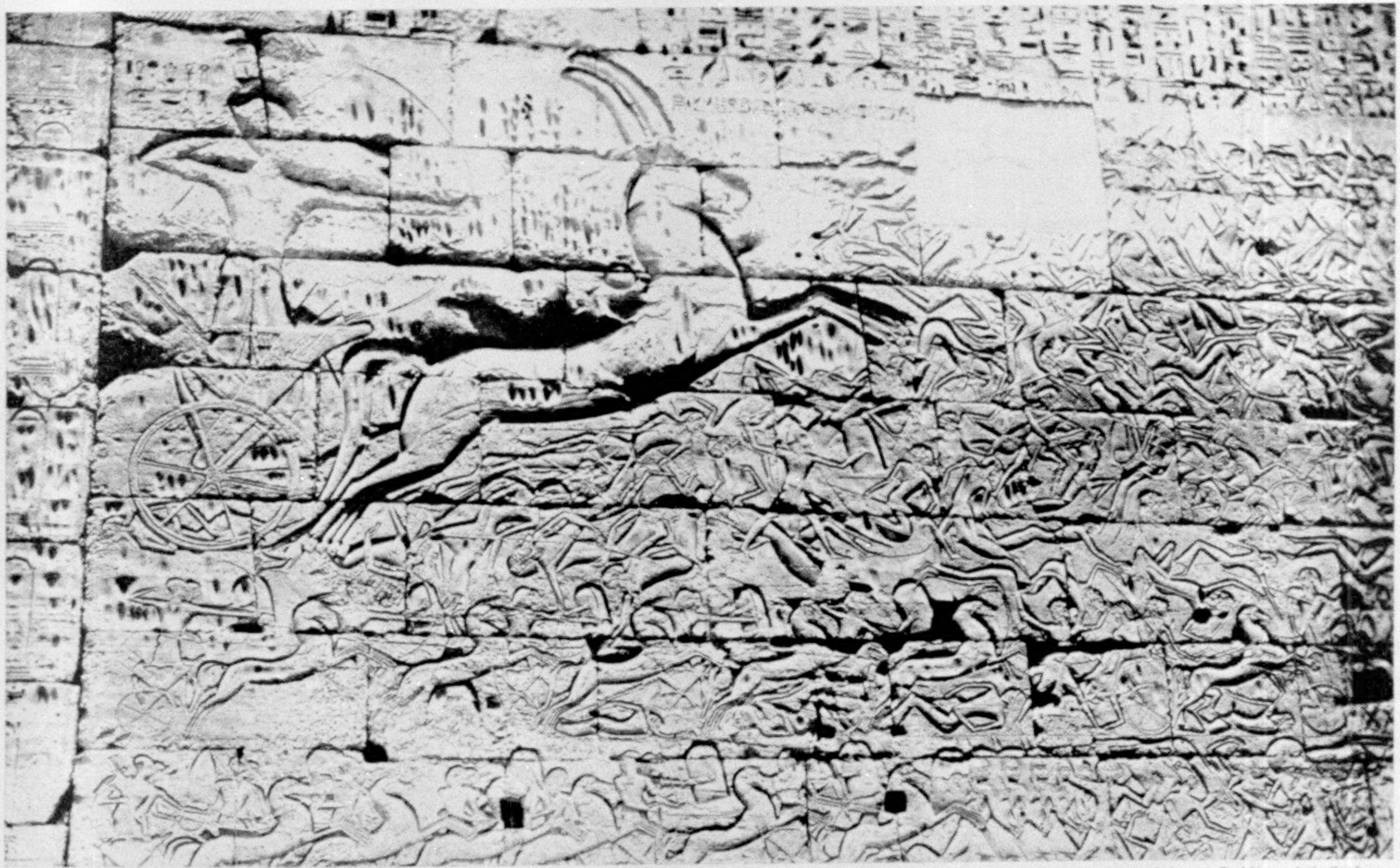
The horse has been the companion and servant of man in nearly all his migrations and conquests, and has always played an important part in the development of that civilization which is based upon intelligent cultivation of the soil.

Scientists all agree that in prehistoric ages certain types of horses ranged over parts of Asia and of North and South America, and that while the wild horses of Asia appear to have descended from the original stock, all such animals had disappeared from North and South America before any modern Europeans landed here.

Research efforts have been highly successful in establishing in the minds of scientists the multiple-toed skeleton remains of an ancient animal as the progenitor of the horse, which during all recorded history has been distinguished by a single toe encased in a wall of horn or hoof, the form best adapted to carrying heavy weight at speed over rough ground.

### SOME UNSOLVED MYSTERIES OF THE HORSE'S ANATOMY

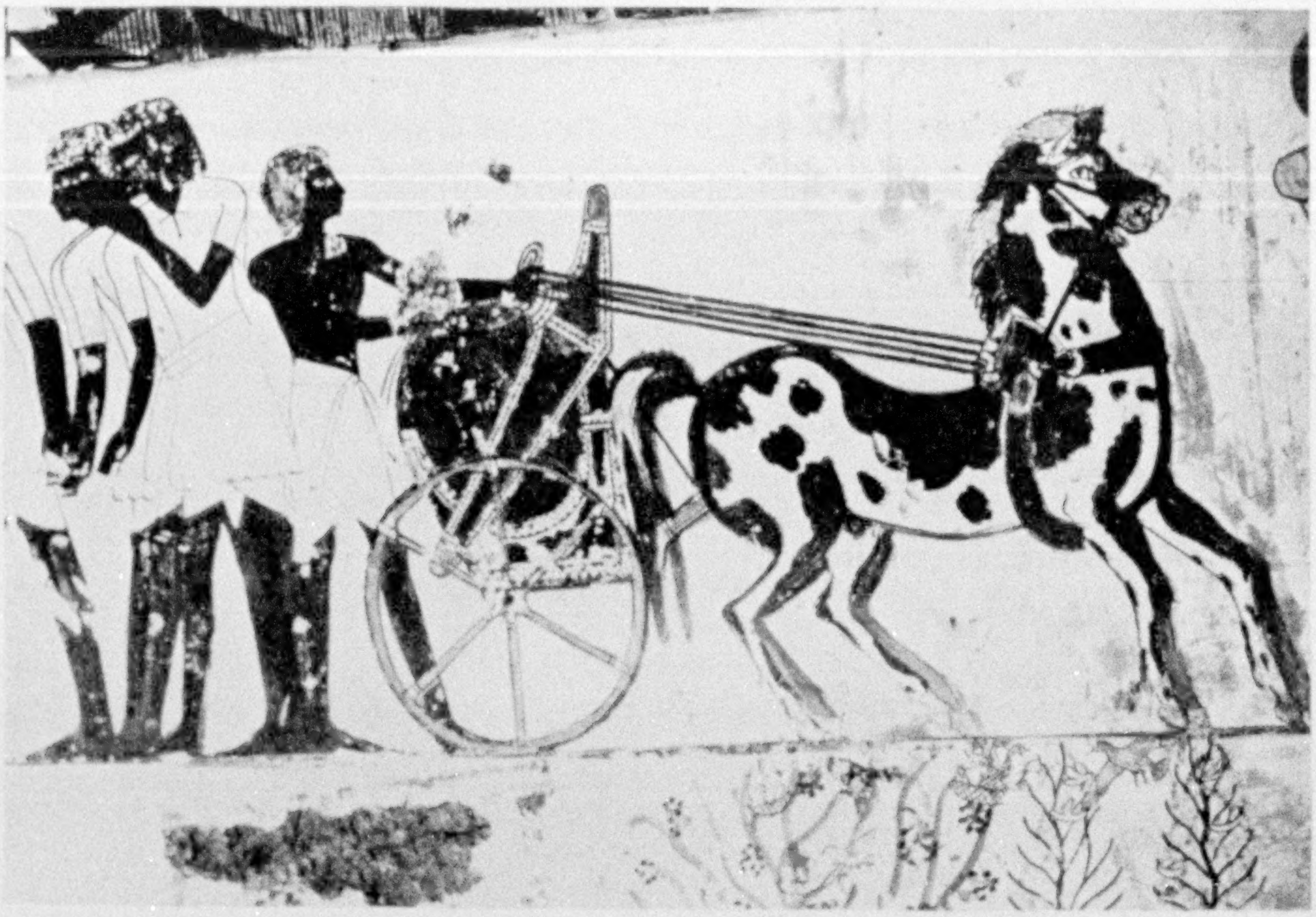
There are certain apparently useless structures connected with the legs of the horse which have given rise to many of the theories concerning his probable evolution from an animal of different type. There is on the inner surface of each fore leg of the



Photograph by A. Gaddis and G. Seif

WAR SCENE ON THE WALLS OF THE MEDINET HABU TEMPLE OF RAMESES III: THEBES

These drawings display a degree of spirit which is surpassed in Egyptian sculpture only by those on the temples of this ruler's great namesake and predecessor, Rameses II. Pharaoh is here represented as standing in his car, drawn by his horses at full speed, while he discharges his arrow at the retreating enemy.



Photograph by A. Gaddis and G. Seif

SUCH WERE THE CHARIOTS WHICH FOLLOWED THE ISRAELITES FLEEING FROM EGYPT 3,400 YEARS AGO

This is the vehicle of Menne, the Egyptian land steward and estate inspector under the Eighteenth Dynasty, as it is depicted on the walls of his tomb at Thebes. The breeding of horses was considered of the greatest importance among the ancient Egyptians and they proved of great utility, but they did not enjoy sacred honors, as so many other animals did. Many of them were exported to neighboring countries, and Solomon bought them, at a hundred and fifty shekels of silver, from Egyptian merchants who traded across the Syrian desert.

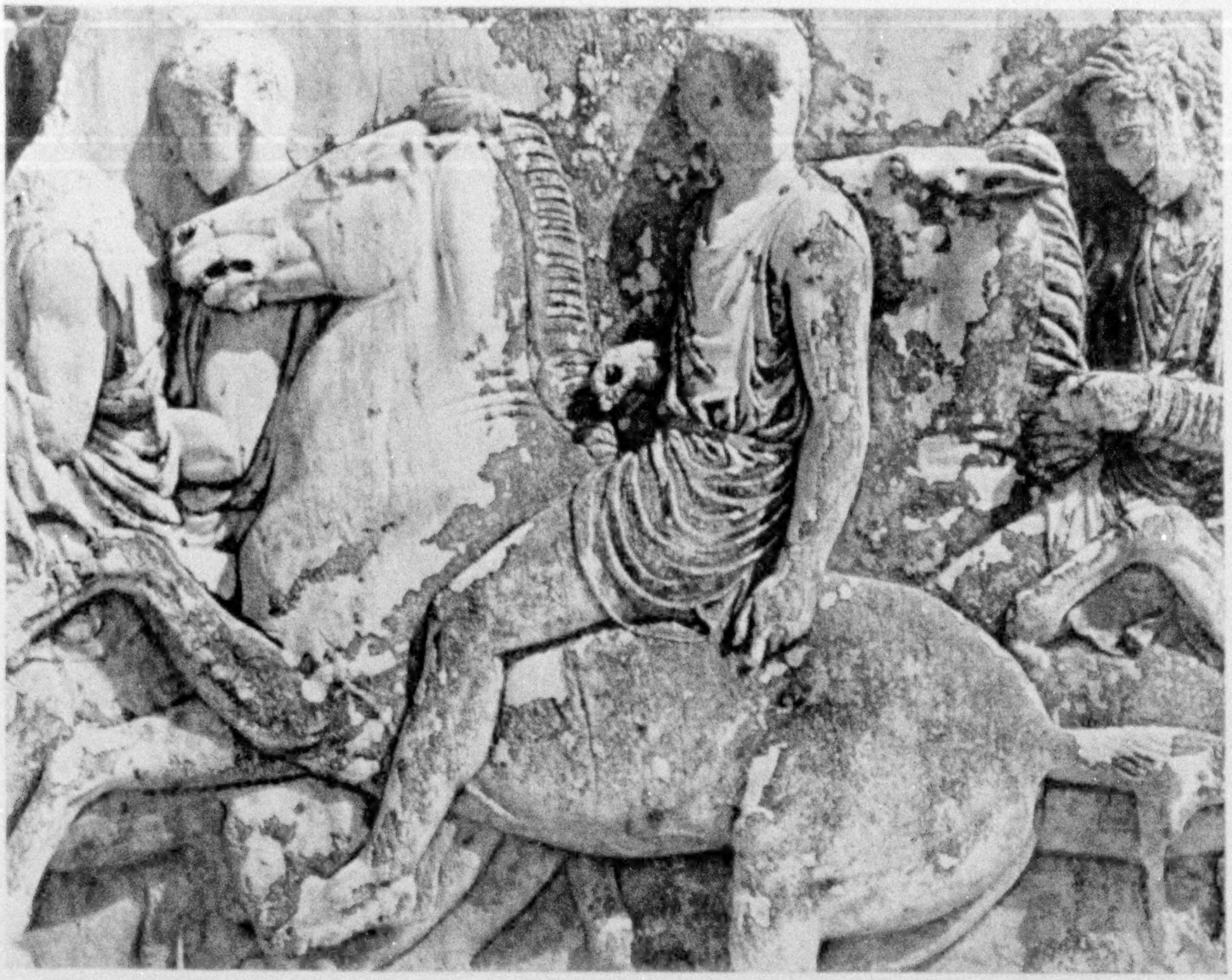
horse, above the knee, and on the inner surface of each hind leg, below the hock joint, a callous, elongated piece of skin known as "chestnut," which has long been a subject of investigation, based upon the idea that it represents the former existence of an appendage which has disappeared in the process of evolution (see chart, page 476).

There is also a bony, wartlike structure, at the back of the fetlock or pastern joint, quite pronounced in some animals, which serves no useful purpose to the horse in his present form.

Practically all writers on the history of the horse who have given serious study to the subject incline to the belief that the wild horse of the steppes of Asia has the most legitimate claim as the source from which the domesticated horse was derived. Not all, however, accept this contention, for some cannot reconcile the appearance and conformation of the present wild horse of Asia with the many types of horses with which the world has become more or less familiar (see text, page 478 and Color Plate I).

Especially do the admirers of the Arabian horse decline to accept this theory, and in the absence of any known history of the last-named breed in Arabia or India, which connects it with other horses of that region before the Christian Era, there may be basis for the contention, and the Arabian may have had his origin in Africa, the home of the Barb horse and numerous branches of the solid-hoof animal of the ass, zebra, and quagga groups (see text, pages 480, 481, 485, 493, and 496).

The Barb horse differs less from the Arabian than the latter does from all other horses. That the conformation, size, and character, generally, of any type



EQUESTRIAN FIGURES IN THE FRIEZE OF THE PARTHENON

The renowned frieze on the outer walls of the Parthenon was a flat bas-relief 525 feet long. It represented the Panathenian festive procession. The horses of this period bore a striking resemblance to the wild horse of Asia (see text, page 464).

of horse may be modified in the course of time, by subjecting him to changes of climate, temperature, forage, and soil, is too well known to admit of question; but the Arabian has only five lumbar vertebræ, while, with rare exceptions, there are six in other horses.

That is a difference which would not be accounted for by reason of change of environment, climate, or forage; and this lends encouragement to those who contend for the Arabian horse as an original stock.

In tracing the history of any particular type of horse, it has been observed that the claim is usually presented that this or that breed is the progeny of native stock or of a cross on native stock.

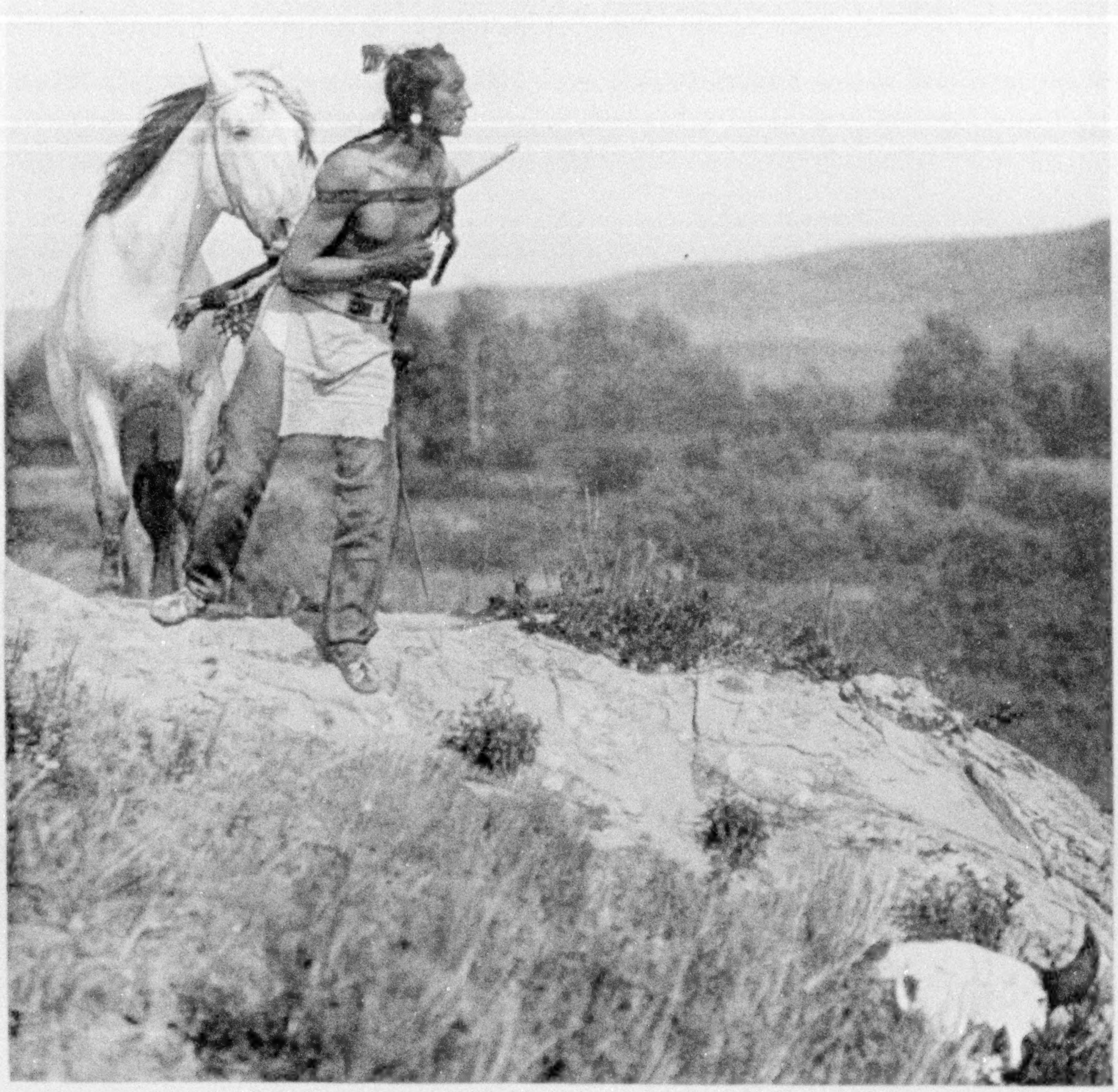
It seems incredible that the heavy, medium, and light classes of horses exhibited at all of the great horse fairs should have descended from a common ancestry, for they differ quite as radically as the deer, the caribou, the elk, and the moose, all animals of the split-hoof breeds, concerning which there is no theory of descent from a common stock.

EARLY HISTORY OF THE HORSE

From earliest times the horse has been known to exist on the high table-lands of Asia.

The use of horse chariots prevailed in Egypt as far back as the history of that country has been made known through monuments and ancient inscriptions (see page 462).

Among the bas-reliefs and pictures of Assyrian, Persian, Nubian, Greek, Roman, Byzantine, and other horses of the ancients, the types are limited and bear but slight resemblance to the modern breeds of horses as developed within the past two centuries (see pages 460 and 461).



© Roland W. Reed

A PIEGAN AND HIS PONY IN THE MONTANA HILLS

The Spaniards found no horses in the New World. The Indians, at first, regarded the strange imported animals with wonder and terror.

The horse, as depicted in the fifth century B. C., in the frieze of the Parthenon and numerous bas-reliefs of that period, bears much resemblance to the wild horse of Asia in size, the shape of the head and neck, and the peculiar short, upstanding mane. The size is readily estimated in comparison with that of the riders, whose legs hang down far below the bodies of the horses (see page 463).

From this early period the horse, as pictured in the geographical areas now occupied by modern nations, began to show an increase in size and weight, and gradually assumed some of the conformations by which we now classify the several breeds of modern horses.

It is a remarkable fact that all history, ancient and modern, is more a recital of wars and conquests than of industrial and commercial progress, and therefore it is not surprising that the war horse is depicted, almost to the exclusion of any other, in the writings, pictures, and sculptures of the ancients.

The writings of Xenophon comprise very complete dissertations upon horsemanship and the duties of cavalry during the fourth century B. C., and many of the points of the horse regarded as desirable then are in entire accord with the requirements of army inspectors of remounts for cavalry service to-day. The Macedonians had long been accredited as

TAPESTRY ARTISTS' CONCEPTION OF HORSES AND HORSEMANSHIP IN THE LOUIS XIV PERIOD

In a series of designs depicting "Twelve Months of the Year," this panel represents July, the Sign of the Lion in the Zodiac. The party is going hawking, and the lady seated on a white horse holds a falcon on her hand.

horsemen when Alexander the Great reorganized his army and established the cavalry as a separate unit.

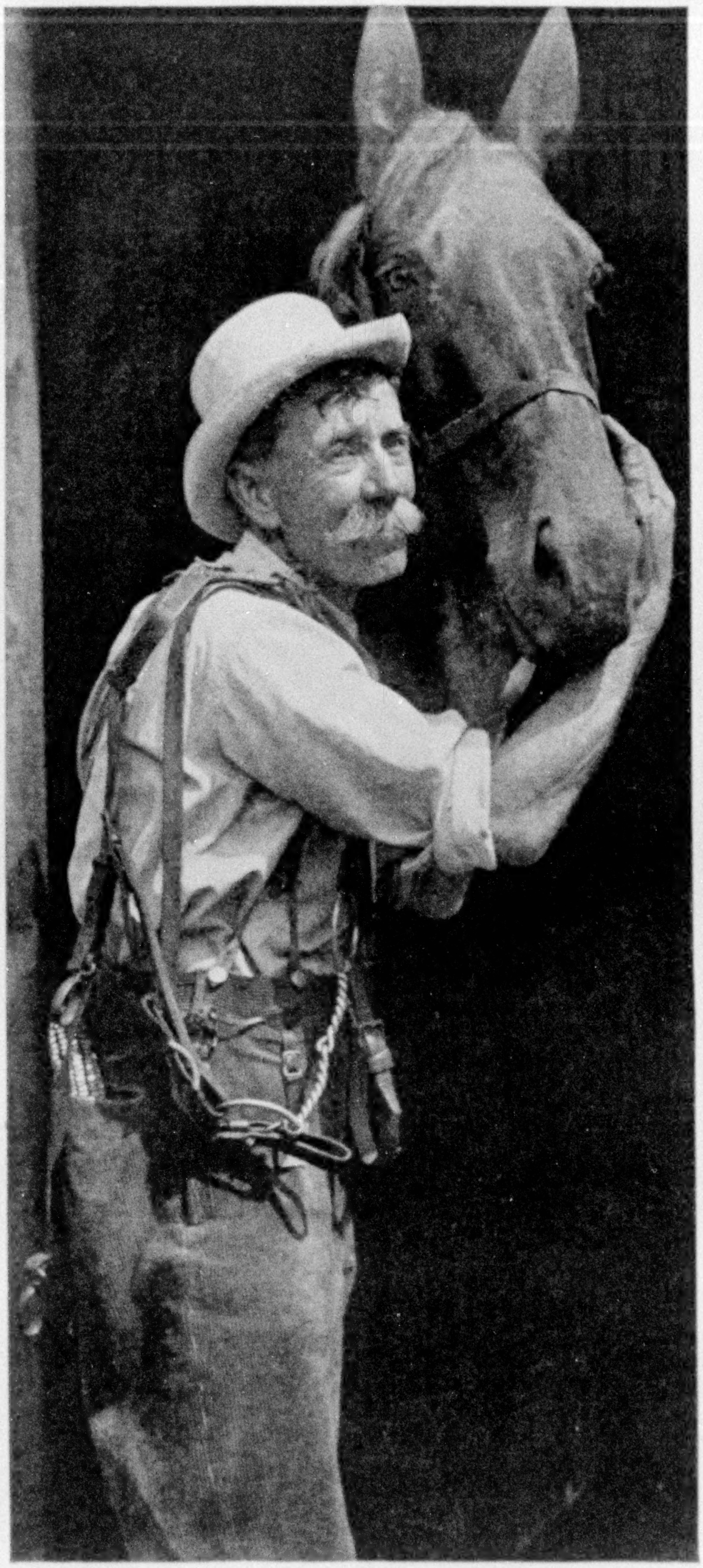
It is historically true that no commander of mounted troops has ever been satisfied with any but good horses, for the lives of his men have depended upon having mounts superior to those of the enemy.

Reasoning from analogy, it is certain that efforts to improve the native breeds of horses began when nations first made war upon each other, and have continued through the intervening centuries to the present time.

HUMAN INTEREST NEVER FAILS THE WINNER

During periods of peace, and with increasing populations, the needs of the agriculturists for farm animals began to take form, and the improvement of draft animals proceeded with that of war horses, and gradually has come to be by far the more important.

In all recorded history trials of strength



Photograph by Nancy Ford Cones

THE FAVORITE

The horse has been the companion and servant of man in nearly all his migrations and conquests, and has always played an important part in the development of the civilization which is based upon intelligent cultivation of the soil (see text, p. 460).

and speed have tempted men to train both themselves and their horses to enter the competitions which in ancient times played a great part in the affairs of state and nation. From the earliest times, when chariot races were provided with settings to tempt the charioteers to deeds of daring, through the romantic period when knighthood was in flower, down to the present, when Man-of-War was acclaimed the greatest of race horses, human interest has never failed the winner.

In the representations of the horse by sculptors, artists, and tapestry-weavers of old, there is observed the same tendency that has continued through the ages in the selection of models. One never sees the undernourished, rawboned, neglected animal, but the well-developed, sleek, and carefully selected horse to represent his class (see illustrations, pages 463, 467, and 534). And this was altogether the proper course, for everything which tends to establish correct ideas as to perfection of quality gives incentive to improvement and especially tends to encourage breeders of horses.

IMPROVEMENT OF THE HORSE

The development of the horse has followed many lines, each indicating a purposeful end in view. The horse that is destined to seek its food on the open range, without shelter from the storms of winter and the midday rays of the sun in summer, accommodates itself to the conditions of its environment; the weak perish and the hardy survive.

In this preparation to withstand hardships on short for-

Photograph by Donald McLeish

THE FAMOUS BRONZE HORSES OF LYSIPPUS ONCE MORE IN POSITION ABOVE THE MAIN PORTAL OF ST. MARK'S CATHEDRAL, VENICE

They once adorned the triumphal arch of Nero at Rome, after which they were taken to Constantinople, where they adorned the imperial hippodrome until the Doge Dandolo brought them to Venice in 1204 as the spoils of war. In 1797 they were carried to Paris by Napoleon, and were finally restored to St. Mark's in 1815. They were removed to a place of safety during the World War to avoid the danger of airplane raids.

age, the first and most observable tendency is a limitation on growth, which gradually accommodates itself to the possibility of eking out an existence during the periods of greatest privation.

Transferred from such environment to the land of plenty, the first observable change is increase of size. With abundance of nourishing food and protection from inclement weather, the horse of any breed will quickly respond, and in a few generations, by careful selection, will bear little resemblance to its early progenitors (see text, pages 488 and 489).

HORSES FIRST USED FOR WAR CHARIOTS

Just when nations began to develop the heavy or draft breeds of horses has not been definitely determined. It has been accepted apparently by historians

MEISSONIER'S MASTERPIECE, "THE CAMPAIGN OF FRANCE," OR "1814," SHOWING NAPOLEON ON HIS WHITE CHARGER ACCOMPANIED BY HIS MARSHALS

The artist depicts the Emperor of the French in 1814, after the Battle of Laon. The sky is dreary, the landscape devastated. The dejected faces express despair. In the center of the picture, seated on his white charger and wearing his famous gray coat, rides Napoleon. Close behind follow his marshals—Ney, with his overcoat buttoned around his shoulders; beside him Berthier; then Flahaut; farther back are Drouet and Gourgaud, and beside them an officer who from sheer fatigue has fallen asleep on his horse.

Photograph from Taber Prang Art Company

CHECA'S CONCEPTION OF "BEN HUR'S CHARIOT RACE"

One of the most famous horse races of fiction is that described in General Lew Wallace's best-known novel: "Ben Hur was seen to lean forward over his Arabs and give them the reins. . . . Out flew the many-folded lash in his hand, and over the backs of the startled steeds it writhed and hissed. . . . They responded with a leap that landed them alongside the Roman's car. . . . A crash was heard loud enough to send a thrill through the circus. . . . Down on its right side toppled the bed of the chariot of Messala."

Photograph by Paul Thompson

A GIRL JOCKEY WEIGHS IN

American jockeys have developed a method of riding, dubbed the "monkey-on-the-stick" style, which requires a sort of aerobatic horsemanship. The short stirrups, with a seat which throws the weight forward of the withers, relieves the hind legs—the propelling power—and enables the horse to make a fraction more speed than the former, long-stirrup seat.

that the horse was first used in low, two-wheeled chariots, of narrow track, mainly for war purposes, and that the general use of the animal for riding followed, as nations began to carry on distant forays and wars.

It is highly probable that vehicles of construction similar to the war chariots were used for transportation purposes, for ancient armies could not make war without supplies, any more than can those of to-day, and all men with military experience are cognizant of the prominent part played by the wagon and pack trains, once an army has moved from its base of supplies.

It is a notable fact that the countries in which Cæsar campaigned in western Europe, including also England, eventually became the region of greatest development of all the heavy types of horses. Doubtless the good roads which so definitely marked the long occupancy of the Romans were the greatest justification to breeders in their efforts to produce a heavy horse, capable of pulling large loads over dependable roadbeds.

Photograph by Underwood & Underwood

ONE OF FIFTY-ONE THOROUGHBREDS, VALUED AT $1,000,000, ARRIVING IN NEW YORK

The carefully crated animal is being raised from the hold of the ship after his voyage from France.

BRITAIN, BELGIUM, AND FRANCE HAVE DEVELOPED FINEST DRAFT HORSES

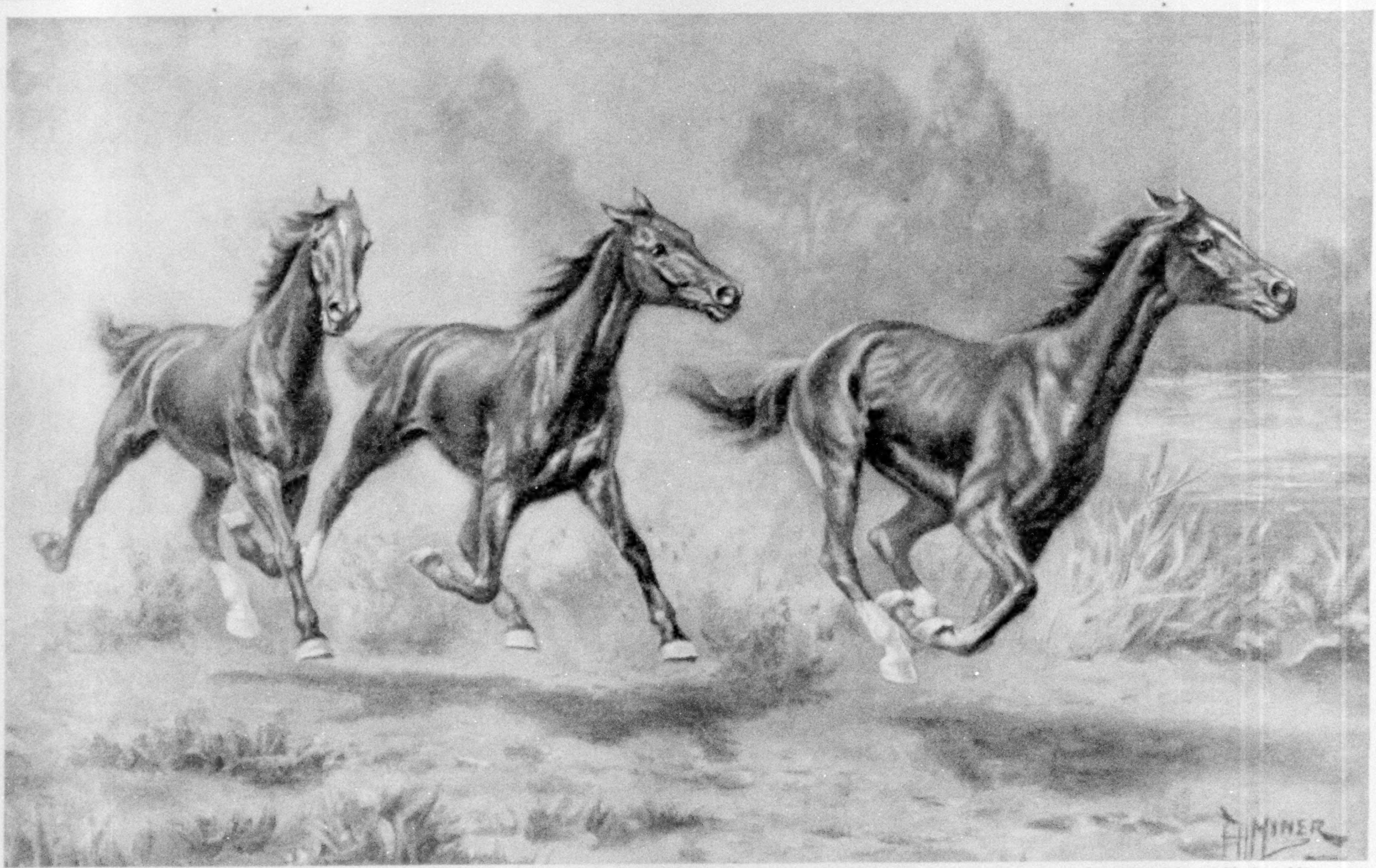
Nowhere else in the world have draft animals been developed comparable in the slightest degree to the French Percherons, the British Shires and Clydesdales, and the Belgians. Breeders the world over turn to them when seeking to improve their heavy breeds of horses (see text and illustrations, pages 504-512).

Nearly every country has some particular breed of horse on which the nation's pride is concentrated, even though it be an undersized horse or pony. There are always legends as to feats of endurance, speed, or exhibitions of superior intelligence, to keep alive the sentiment of a community in which horse-breeding plays an important rôle.

This sort of pride finds no counterpart in the products of industrialism, where the individual becomes an insignificant part of the grinding mill wheels or is lost

© Wide World Photograph

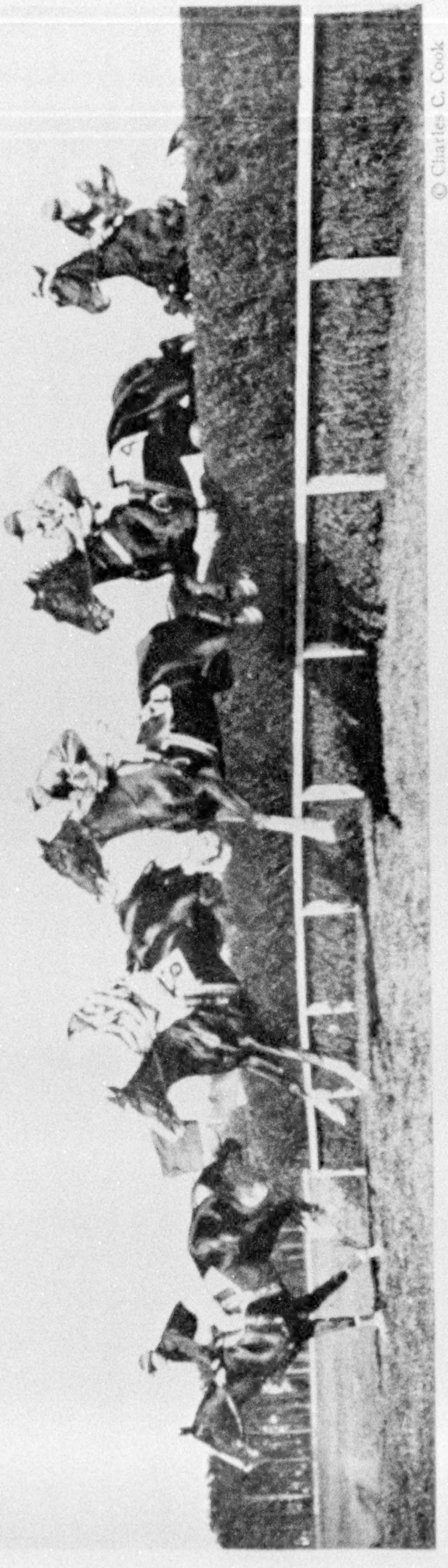
AN ACROBATIC HORSE AT A LONDON FAIR: HE HAS ASSUMED THE POSTURE OF A BOXING KANGAROO




Sketch by Edward Herbert Miner

THE TROTTER, THE PACER, AND THE RUNNER IN ACTION

This sketch shows the three gaits which horses assume when traveling at speed, in the relative positions which the speed of the different gaits would place them. The trotter (left) strikes, at the completion of each stride, on the forefoot of one side and the hind foot of the opposite side; thus always the legs of the same side move in opposite directions, the forefoot being raised before the hind foot of the same side passes over to its landing position. The pacer (center) moves the two legs of the same side together in perfect rhythm, both when leaving the ground and when landing; this gait is clearer from interference than the trot and is a little faster. The runner (right) differs entirely from the other two, in that at the end of each stride he lands on one hind foot. After the impetus of the next stride has been given by the hind quarters, the weight is placed entirely upon one foreleg before the animal leaves the ground. It is this peculiarity of stride of the runner that places so much more strain upon the Thoroughbred race horse than is borne either by the trotter or the pacer. Both the latter, with only a light harness upon them, bring their weight down upon two feet, whereas the weight of the runner and of its mount is thrown entirely upon one.



© Charles C. Cook

A REMARKABLE PHOTOGRAPHIC STUDY: EVERY POSITION OF A HORSE TAKING A JUMP, AT BELMONT PARK, NEW YORK

in the everlasting process of setting a continuous array of rivets.

From the Mongolian ranges, coming westward, the Turkoman, Persian, the Karadagh of the Cossack, the Kurdish, the Arabian, and many other breeds have won the hearts of the peoples whom they have served in war and peace for untold generations; and this brings us to the confines of modern Europe, where are now centered all the breeds upon which we have drawn to create the great aggregation of horses found at the present time in America.

### BRITISH HORSES

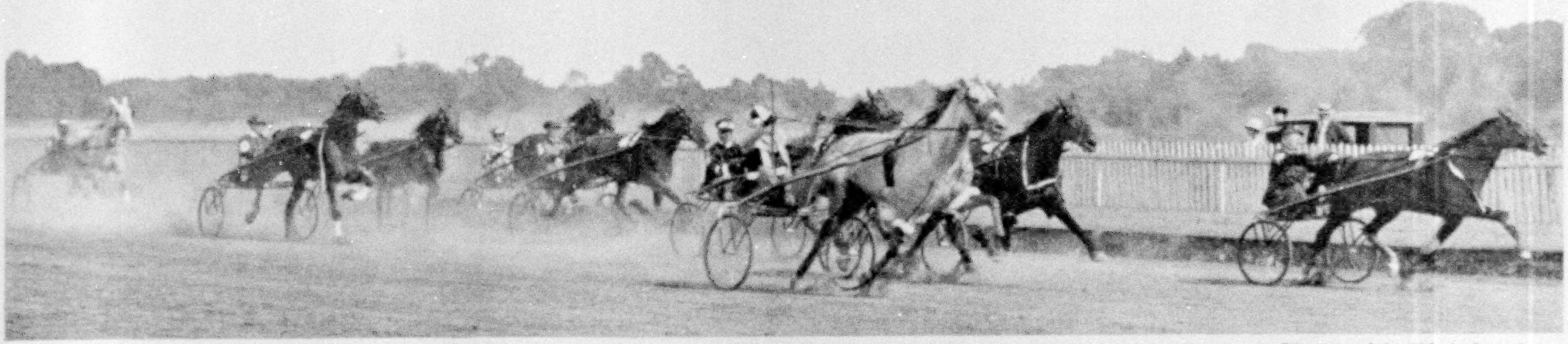
When Cæsar invaded the British Isles, about the middle of the first century B. C., he found the natives possessed of hardy horses, of small size, which they used with considerable skill. There was no pretense of raising forage for horses in that early period, and they ranged in droves, being rounded up from time to time to select those for use and possibly for breeding.

These animals constituted the foundation stock of the British Isles, on which was grafted from time to time superior animals. Those left to seek forage on the range remained small and undeveloped and comprise in their descendants the ponies known under various local names.

The foundation stock of British horses from which our early immigrants made their first importations has been much investigated, because from it was developed the Thoroughbred, which, once established, whenever crossed with good mares, has resulted in definite improvement along the lines of speed, courage, and stamina.

An eminent investigator, as the result of much historical research, credited the existence in Great Britain of many excellent horses, at the time of the Roman invasion, to the far-reaching commerce of the ancient Phœnicians during the period of their maritime supremacy, several centuries before the Christian Era.

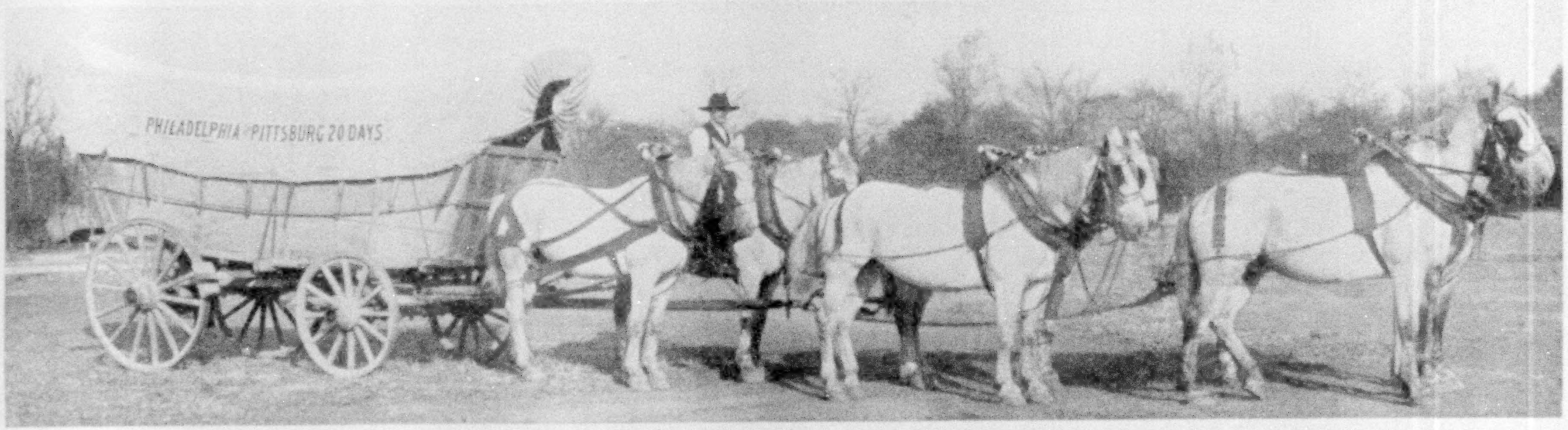
The Phœnicians are known to have visited the Mediterranean and Atlantic ports of Spain, and among the principal elements of their commerce were horses. The colonies planted by them in Algeria, Morocco, and other parts of northern



Photograph by Edwin Levick

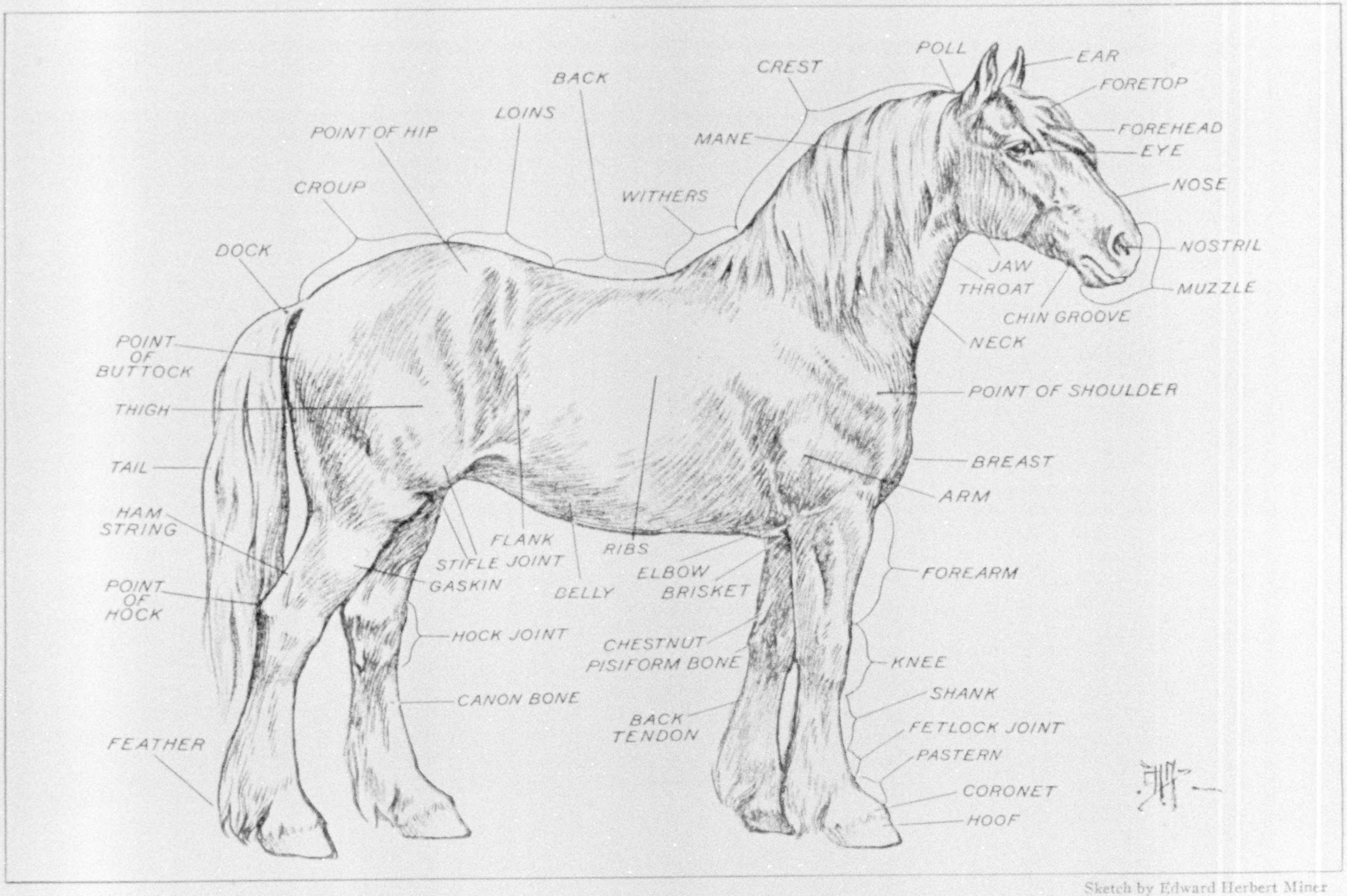
TROTTING HORSES

Smooth clay tracks, light harnesses, easy-running sulkies, and the skill of the trainers have made American trotters world renowned.




THE FORERUNNER OF THE PRAIRIE SCHOONER

This six-horse Conestoga wagon (see text, page 539) is a survival of the days when commerce moved between Pittsburgh and Philadelphia by horse team.




Sketch by Edward Herbert Miner

A CHART OF THE ANATOMY OF THE HORSE

Africa have been celebrated for the character of their horses since a period antedating the Christian Era many centuries.

It is more than a mere probability that in the course of barter and exchange many Phœnician horses of the type so generally used by the Saracens, and which poured into Spain during its occupancy by the Moors, found their way to the British Isles and became at least a part of the foundation stock on which later importations were grafted to create the Thoroughbred.

The debt for infusions of high-grade blood which the horse world owes to northern Africa has never been fully acknowledged. The Libyan tribes were possessed of horses long before the Arabs were known to have had any, and it is entirely possible that the north African region supplied through Egypt the progenitors of the Arabian horses, which have held their own for many centuries, preserving their purity of blood by persistent inbreeding.

JOHN EVELYN'S DIARY TELLS OF TURKISH HORSES IN ENGLAND

In his remarkable diary, John Evelyn records the early arrival in England of some rare horses, possibly of Arabian ancestry:

"17th December, 1684. Early in the morning I went into St. James Park to see three Turkish or Asian horses, newly brought over, and now first shown to his Majesty. There were four, but one of them died at sea, being three weeks coming from Hamburg. They were taken from a Bashaw at the siege of Vienna, at the late famous raising that leaguer.

"I never beheld so delicate a creature as one of them was, of somewhat a bright bay, two white feet, a blaze; such a head, eyes, ears, neck, breast, belly, haunches, legs, pasterns, and feet; in all regards, beautiful, and proportioned to admiration; spirited, proud, nimble, making halt, turning with that swiftness, and in so small a compass, as was admirable.

"With all this so gentle and tractable as called to mind what I remembered Busbequius speaks of them, to the reproach of our grooms in Europe, who bring up their horses so churlishly, as makes most of them retain their ill habits. They trotted like does, as if they did not feel the ground.

"Five hundred guineas was demanded for the first, 300 for the second, and 200 for the third, which was brown. All of them were choicely shaped, but the two last not altogether so perfect as the first.

"It was judged by the spectators, among whom was the King, Prince of Denmark, Duke of York, and several of the Court, noble persons skilled in horses, especially Monsieur Faubert and his son (provost masters of the Academy and esteemed of the best in Europe), that there were never seen any horses in these parts to be compared with them.

"Add to all this the furniture, consisting of embroidery on the saddle, housings, quiver, bow, arrows, scymitar, sword, mace, or battle-ax, *à la Turcisq;* the Bashaw's velvet mantle furred with the most perfect ermine I ever beheld; all which, ironwork in common furniture being here of silver, curiously wrought and double gilt to an incredible value.

"Such and so extraordinary was the embroidery that I never saw anything approaching it. The reins and headstall were of crimson silk, covered with chains of silver gilt. There was also a Turkish royal standard of a horse's tail, together with all sorts of other caparisons belonging to a general's horse, by which one may esteem how gallantly and magnificently those infidels appear in the field; for nothing could be seen more glorious.

"The gentleman (a German) who rode the horse was in all this garb. They were shod with iron made round and closed at the heel, with a hole in the middle about as wide as a shilling. The hoofs almost entire."

No other reference has come to the writer's attention concerning these animals, but doubtless they were stallions and were used to improve the breed of British horses, along with the three stallions which came into England and to which all Thoroughbreds are traced (see text, page 509).

CRUSADERS' ARMOR GAVE IMPETUS TO BREEDING OF LARGER HORSES

It is not known just what blood was used to build up the heavy British horses,

(*Continued on page 527*)

## THE WILD HORSE OF ASIA

(*For illustration see Color Plate I*)

The only family of original wild horses, not feral or those which have run wild from domesticated herds, known to exist in recent years is the Tarpan, or Przhevalski, which inhabits the steppes of Tatary and Mongolia from the Dnieper to the Altai Mountains, and through the whole of central Asia, in small herds, seldom 50 in number.

The wild Tarpan was given its new designation in honor of the Russian explorer, Przhevalski, after he had identified and classified the small bands found ranging near the borders of China.

The Tarpans are smaller than the domesticated horses, having slender legs, big heads, and large ears, bent back at the tips. The forehead is protuberant above the eyes, with a whorl of hair between the latter. The hoofs are small and almost cylindrical. The mane extends from between the ears to the shoulder blades and is short and upright. The tail is of moderate length. In winter the coat is long, rough, and wavy on the back.

The full-grown horses are quite untamable, but colts may be domesticated. They frequent the open ranges of the steppes. Like other wild animals, they can scent human beings at a distance and avail themselves of their great speed to escape.

The Tarpans, like the semi-wild Mustangs of early frontier days (see pages 521 and 524), separate into small bands, each with a stallion leader. They exist in greatest purity near the borders of China. They are found quite unmixed with the domesticated horse, on the Kara Kum and the Syr Darya, near Kuznetsk, and on the banks of the River Tom, in the territory of the Kalkas, the deserts of Mongolia and the Gobi.

There are some mixed herds within the Russian frontier, in the vicinity of settlements, distinguishable by their variety of color.

Tarpans are not large and their color is usually tan or mouse, in their several shadings. During the winter season the hair is long, heavy, and soft, almost akin to the fur of the bear.

The specimen obtained, and to which the name Przhevalski was given, appeared to be intermediate in character between the horse and the Kiang and Onager (see Plate V and text, pages 481 and 484), having, however, chestnuts on all four legs and only the lower half of the tail covered with long hair.

The general color was dun, tinged with yellow, on the back, becoming lighter toward the flanks and almost white on the belly. The short and upright mane was dark-brown. The head and hoofs were those of the horse.

The Tarpan, or Przhevalski, has many points of resemblance to the horse depicted on the walls of caves in Europe, and on stones and pieces of horn pertaining to the age before the tribes inhabiting the present confines of that region had come to the state of civilization characterized by dwelling in houses and villages.

Scientists have long since established the fact that wild horses existed in the prehistoric age, and historians have assembled much scattered testimony that they continued to range, not only over the steppes of Russia to the foot of the Carpathians, but through Europe down into the period of recorded history.

There are definite references in the writings of numerous authors to the wild horses of Iberia (Spain), the Alps, the forests of Germany and the adjacent countries to the east, to the inhabitants of which region they were permitted as food by the church until interdicted by Pope Gregory III in 732 A. D.

Among the benedictions pronounced by the Monk Ekkehard of St. Gall over the meats to be served in the refectory of the monastery, about 1000 A. D., one refers to the flesh of wild horses. In a Westphalian document of 1316 the fishing, game, and wild horses of a certain forest were definitely apportioned.

In a description of the district of Alsace and the Vosges in 1593, there occurs language of even more interest than some of the earlier references of writers to the horse:

"Horses that be of their kind much wilder and shyer than the stag; yet when they are tamed, which is accomplished with great toil and trouble, they make the very best horses, that equal those of Spain and Turkey, and surpass them in many things, and are hardier, for they are accustomed to cold, and to coarse food, and are sure-footed, being as used to mountains and rocks as the chamois."

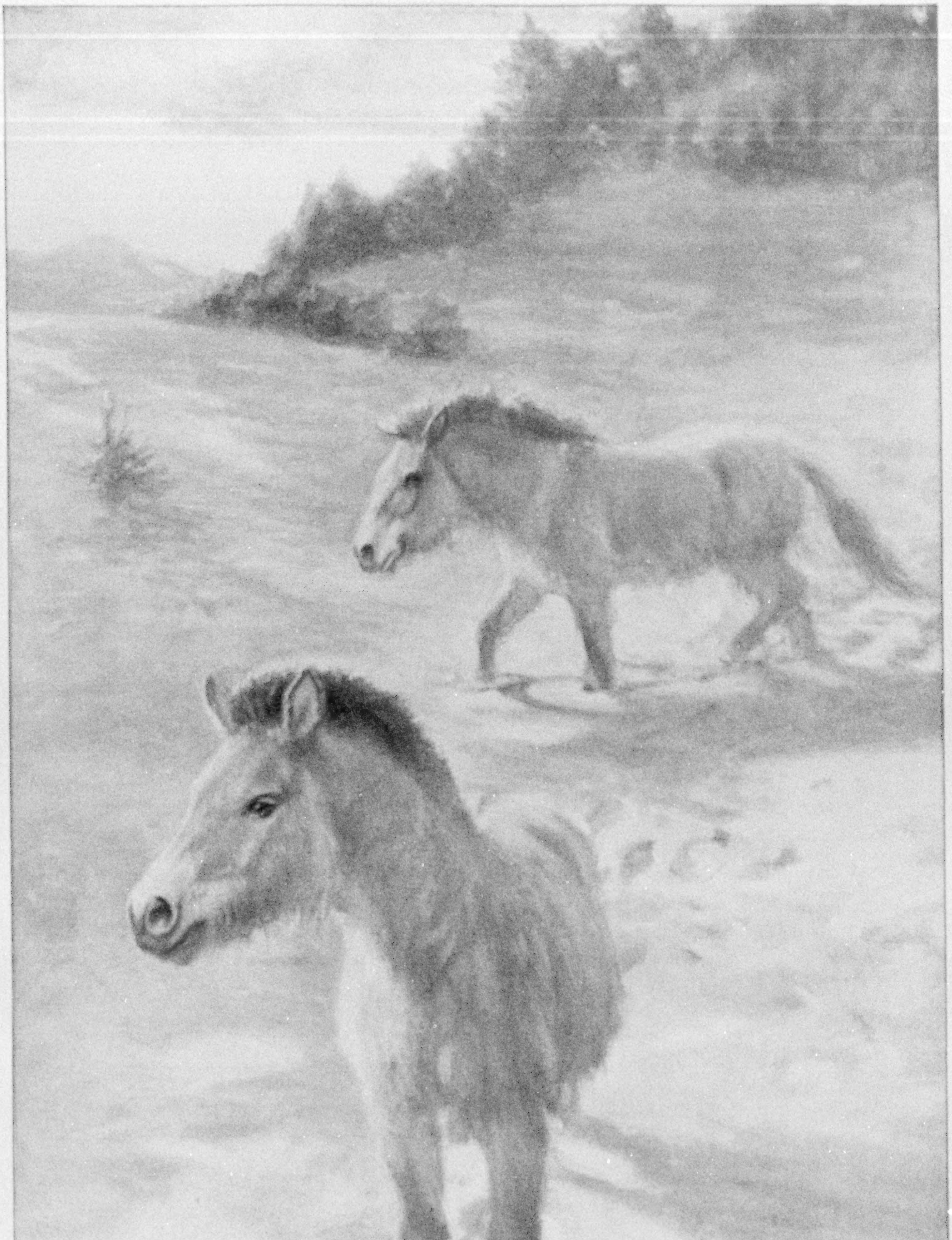
It may seem incredible with so much scattered evidence of the continued existence of the horse during many centuries, that none of the older generations of writers should have left a profound dissertation on the history of the horse.

When, however, it is considered that down to within a century there were innumerable references to a fine breed of horses in Spain, known as jennets, not to be confused with the modern name for the female ass, and that to-day no record can be found as to whence the jennets came, or as to their disappearance, by absorption or otherwise, the absence of definite historical records of the ancient breeds of horses should not be surprising.

Fortunate, indeed, is the modern world that the old writers recorded such observations as they did make on parchment; had they used the typewriter and wood-pulp paper of the present age, their work would have been swallowed up in dust and decay, as have been so many other evidences of their existence on earth. The most astonishing thing in the changing world is the continued existence of the written words of the ancients.

There are so many historic allusions in these ancient writings concerning the hunting of wild horses for food and for their skins, within the present geographical area of Europe, that there seems legitimate ground for accepting them as a basis for the definite declaration that there have existed, coincidentally with man during his occupancy of nearly all populated areas, horses, either wild or domesticated from wild stock, and that those horses furnished the foundation for all the improved breeds of the present day throughout the world.

There is no more reason for trying to trace

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THE WILD HORSE OF ASIA

them all to a common source than there would be in an effort to find a common ancestral parentage for the bighorn, the mountain sheep, and the domesticated goat.

## GRÉVY'S ZEBRA

*(For illustration see Color Plate II)*

The zebra is recognized as a member of the horse family and is readily identified by its striped skin.

At the present time the several groups to which zebras, differing slightly, have been assigned are all found in Ethiopian Africa. That one to which the name Grévy's zebra has been given is found in Abyssinia and Somaliland.

The Grévy's is the largest and in some respects the most horselike of all the zebras and differs from the others markedly in the width and arrangement of the stripes. The mane extends to the withers, the tail tuft is large and full, and the chestnuts on the inner sides of the fore legs are as small as those of the horse.

As regards the dark-brown or black markings and the intervening light stripes on the body, head, and legs, these are for the most part very narrow, widening out only on the lower jaw, neck, and the lower part of the thighs.

On the flanks none of the stripes bend backward and upward to the hind quarters, the upper portions of which are marked with vertical stripes arranged concentrically round the root of the tail. The dorsal stripe is very broad, especially near the middle of the back; there are no transverse stripes on the underparts. The stripes on the nose stop short of the dark nostril patches and the nose is grayish. The stripes on the rump have their concavity upward, whereas in Chapman's zebra (Plate III) the convexity is upward.

The large, broad, and thickly haired ears are quite different from those of all other members of the zebra family, which are narrow and pointed.

It has been suggested that the large size of the ears and the narrowness of the stripes in this group are probably the result of a life spent in thick scrub. Large ears are very commonly present in forest-dwelling animals, while narrow, vertically disposed stripes appear to be adapted to concealment in the jungle.

Grévy's zebra itself differs slightly in different districts. In those which live in the highlands of the Shoa district of Abyssinia the dark stripes are black and the light stripes are white. In the Somaliland group the dark stripes are chocolate-brown and the lighter bands of a yellowish tinge, the contrast between the stripings being much less than in the Abyssinian animal.

Grévy's zebra averages about 12 hands in height. They are usually found in small bands of ten or twelve and seem to prefer the undulating, rocky bush country.

The heavily striped zebras pertain to the northern groups. The first encountered by the Boers south of the Orange River, which they called quaggas, have the stripes confined to the head, neck, and forward half of the body. Through persistent hunting of this latter group for food and hides, it has disappeared as our buffalo did.

The zebras of Somaliland and Abyssinia are readily recognized by their very narrow stripes. They are shot for food by hunting parties, but are not regarded as game animals. They are easily stalked within the range of modern rifles.

It is not uncommon for the Grévy's zebras to approach the camps of hunters and bray and stamp around to attract the attention of the domesticated animals at night. The bray of this zebra has been described as a hoarse noise varied by a sort of whistle.

## GRANT'S AND CHAPMAN'S ZEBRAS

*(For illustrations see Color Plate III)*

Zululand is the home of a group of zebras in which the body stripes meet the neutral stripes inferiorly, while the legs are more or less fully striped. In this particular group the shadow stripes on the hind quarters are strongly developed and not much narrower than the intervening spaces. The fetlocks and pasterns are devoid of stripes or spots.

In the Chapman's zebra, formerly known as the Matabele bontequagga, the shadow stripes are faint and narrow, the legs are barred to the hoofs, the stripes on the lower portions tending to break up into spots. This group inhabits the country between Damaraland (southwest Africa) and Matabeleland (southern Rhodesia).

On the north side of the Zambezi the group from the plains around Kilimanjaro appears to connect with the more northern groups, retaining slight traces of shadow stripes, which in many cases are visible only on the hind quarters, and having the bars on the pasterns distinct from one another.

Closely allied to the Kilimanjaro group, and really intergrading with it, is the bontequagga of British East Africa (Tanganyika Territory), named Grant's zebra. In this group, as in those of British Central Africa (Nyasaland) and southern Abyssinia, the shadow stripes have completely vanished, and the stripes on the hind quarters are at least equal in width to the intervening spaces, which are white.

In the Grant's zebra the stripes are broad and in some cases completely black, and the bars on the pasterns are fused into a continuous black band.

In certain zebras from the Guas Ngishu plateau of British East Africa, the forelock is entirely wanting, and the mane, except for a small tuft in advance of the withers, is reduced to the same condition as in a hog-maned polo pony, presenting an appearance quite different from that of the ordinary zebra.

A similar peculiarity is observable in the zebra from the Lake Mweru district, and in those of the Guas Ngishu district. These belong to the group of Grant's zebras.

Some of the Guas Ngishu zebras have been found without the mane and forelock, which suggested periodic shedding, but as this does not occur in any other members of the family—horses, asses, mules, or zebras—it is believed to have been due to local and extraneous conditions.

Among the Grant's zebras individuals have been seen in the herds with fawn-colored, unstriped areas immediately in front of the large oblique stripes on the quarters; also, occasionally a white or albino has been observed. These exceptions to general rules occur among practically all animals.

Zebras are essentially animals of the plains, on which they congregate in herds, associating frequently with the gnus, as well as with ostriches.

This association, it has been suggested, may have arisen from mutual advantage, the ostriches by reason of their height being able to see the approach of an enemy in the open, while the others are able to detect the presence of danger through the sense of smell. If one of the trio took flight, the others would be warned to follow suit.

In this connection the effect of the striping of the zebra as a protective element has often been discussed. It is commonly believed that the effect in all the fully striped groups of zebras is to render them inconspicuous at a distance on the plains, and at closer range in moonlight, at dusk and in the jungle.

The alternate light and dark stripes harmonize with the shafts and streaks of sunlight falling on foliage, and in part the stripes on the body and legs break up the general hard outline of the animal into a more or less indistinct, soft grayish blur.

The optical effect in some of the zebras is to divide the animal into two distinct objects when viewed from a distance and to obscure or completely obliterate the horse outline.

At a distance less than that at which the whole of the stripes melt into a confused gray blur, the general effect is to render the animal much less conspicuous than would be the case if the stripes were of the same width throughout and took the same direction on all parts of the skin.

It has been observed that in nearly all animals that inhabit open plains the legs and under surface of the body are conspicuously lighter than the upper parts, so that when the animal is standing in bright sunshine the light coloring of the lower surface completely counteracts the effect of the dark shade cast by the body and tends to produce invisibility.

The word camouflage has become Anglicized since the World War. Its use on warships and commercial vessels followed the lines of nature in the zebra's skin, and while no painted lines could reduce the outline of a steamship, with its funnels of smoke, to the vanishing point, the arrangement did obscure it very much, made aiming at long range more difficult, and gave a feeling of added security to passengers and crews.

## MOUNTAIN ZEBRA

*(For illustration see Color Plate IV)*

The name Mountain zebra has been applied to the group inhabiting the mountains of Cape Colony, known to the Boers as wildepaard, or wild horse. This group is distinguishable from other groupings of zebras by its asslike appearance, especially the long, narrow ears and the transverse stripes on the hind quarters above the tail. The stripes are white on a black ground.

In addition to these features, the species is characterized by the hairs on the middle of the back, from the withers to the rump, being directed forward instead of backward. The tail tuft is less developed than in other species and the hoofs narrower.

The stripes on the hind quarters are very broad and separated by light intervals approximately similar in width. The transverse stripes on the body are narrow and closely set, and all of them stop short of the middle line of the belly, so as to leave a white space on each side of the longitudinal ventral stripe.

The corresponding dorsal stripe is very narrow and connected with the transverse stripes, most of which run nearly at right angles to this line, although the last two, which are much broader than the rest, are bent sharply backward, so as to cause the uppermost one on each side to form the lateral border of the previously mentioned gridiron.

All the legs are barred down to the hoofs and the chestnuts on the front legs are larger than those of any other member of the horse family.

The throat is peculiar in having a small but pronounced dewlap. There is considerable tan color on the muzzle. The Mountain zebra attains a height of 12½ hands.

This zebra is essentially a mountain animal and formerly inhabited all the mountain ranges of Cape Colony. It is accustomed to traveling over rough and rocky ground and its habits seem similar to those of other zebra groups. Only a few herds of Mountain zebras have survived under government protection.

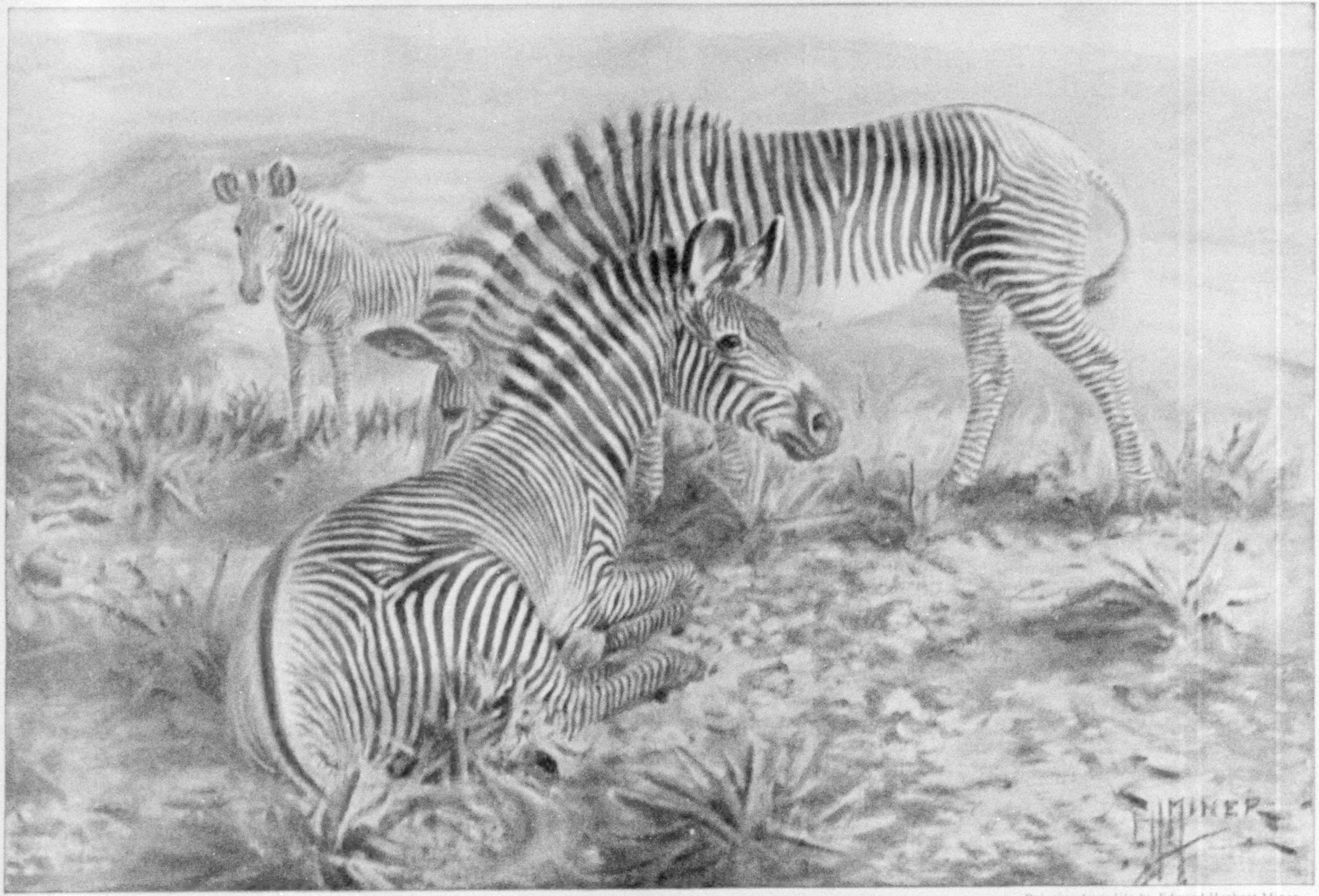
For many years there was an inclination to assign names to zebras as of many groups, but they are practically the same animal except in the peculiarity of the arrangements of their stripes. They have been used in Africa as food by natives whenever available. They have never been of any material help to man in the cultivation of the soil or as means of transportation. A few isolated cases are known where they have been broken to harness, but they were in no sense equal to the horse or mule. Attempts to cross them on asses and mares of the horse family have produced foals of no value except as curiosities.

## KIANG

*(For illustration see Color Plate V)*

The Kiang and Onager belong to the wild ass species. There is less of definite knowledge of these animals than of almost any other now existing, for the reason that they inhabit the wild and less settled parts of Asia and have never been domesticated.

With very slight changes of coloring, they are found in widely separated areas and always in the deserts or less attractive uplands. They have the form, the solid hoof, the short upstanding mane, and practically all the other



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GRÉVY'S ZEBRA

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GRANT'S AND CHAPMAN'S ZEBRAS

qualities essential to class them as members of the ass family.

The Kiang is found in the high and isolated regions of Tibet, in the vicinity of lakes and mountain streams, where it feeds on the coarse and wiry grasses. It is larger and more powerful than the Onager, averaging about 13 hands in height.

The Kiang was encountered by the early explorers of Kashmir. It abounds on the great Changchenmo plain and in the arid country around Pangong Lakes, the feeding grounds of the Tibetan antelope and formerly of the Yak. Its range extends eastward into Tibet.

These barren countries are scorched at midday in summer, but because of the high altitude are bitterly cold at night; nevertheless, the Kiang thrives there.

The Kiang differs radically from others of the ass family in his partiality for lakes and streams, in which he swims in icy-cold water.

The ears of the Kiang are larger than those of the horse, but not so large as those which characterize the ass family generally. The chestnuts, which exist on all four legs of the horse, are found only on the front legs of the Kiang.

The cry of the Kiang approaches that of the neighing horse rather than the bray of the ass and mule. The hoofs are not as broad as those of the horse, but are very flinty and hard, to enable him to traverse the rocky region in which he makes his home.

The Kiangs, like wild horses, range in small bands and do not seem to fear man, for they have frequently been observed to gallop in circles around parties of travelers. The Tatars capture them for food, and occasional specimens have been taken for zoölogical collections, but they remain, generally, as wild as when first known by the ancient people of Asia.

The back and upper parts of the Kiang are of a reddish tinge, in sharp contrast to the white of the muzzle, underparts, buttocks, and legs. In winter the long, shaggy coat of hair tends to obscure the difference in markings so well defined in summer.

In Mongolia the Kiang is replaced by its near relative, the Chigetai (Dziggetai), a smaller and more uniformly colored animal, with more rounded hoofs. The difference in general appearance between this animal and the Kiang proper is due to the less rufous tint of the darker areas in the summer coat and to the fact that this shades off imperceptibly into the dirty white of the under surface of the body and the paler fawn of the throat and limbs.

Having the same narrow dorsal stripe and dark tips to the ears as the Kiang, the Chigetai lacks the dark patch at the base of the ears distinctive of the latter. If not identical with, the Chigetai is nearly related to the Koulan of the Kirghiz Tatars.

## THE ONAGER

*(For illustration see Color Plate V)*

Closely allied with the Kiang and Chigetai is the species known as Onager, which signifies wild ass, and which inhabits the deserts of Asia, from Syria and Persia in the west to northwestern India and Mongolia on the east. The Onager is a rather smaller and paler-colored animal than the Chigetai, with nearly as well-marked a contrast between the dark and light areas as in the Kiang.

The Onager stands from 11 to 11½ hands in height; the hoofs are narrower and more asslike than those of the Kiang. The profile of the face may be either straight or sinuous; the tail tuft is of moderate size; the dark dorsal stripe, which is always much wider than that of the Kiang, stops in some cases short of the tail tuft and is flanked on either side, at least in the posterior half of its length, by a whitish band joining the white on the buttocks and the backs of the thighs.

In the summer coat the general color of the upper parts is usually some shade of pale reddish fawn or sandy, while the light areas, which vary from pure white to light-brown, are much the same in extent as those of the Kiang, but embrace more of the buttocks, from which they spread along the margins of the dorsal stripe, and in some cases occupy more of the body and head. In winter, when it grows much longer and rougher, the coat becomes more or less gray, with sharply defined white areas.

With such a wide geographical distribution, it is not surprising to find that the Onager is divided in numerous local branches, each somewhat defined.

Probably the best known of these is the Indian Onager of the desert districts of Sind, Cutch, Baluchistan, eastern Persia, and Afghanistan, and thence north to Bokhara. This Onager attains a height of 11½ hands. To the east of the Indus this animal is found in Bikaner, Jaisalmer, and the saline tract known as the Rann of Cutch.

The Persian Onager, found from western Persia to the southward of the Caspian, has such a development of the white areas, as compared with the Indian type, as to give the appearance of a white animal with large fawn-colored patches on each side. The facial profile is distinctly convex and the ears are relatively small. The light color of the Persian Onager is an adaptation to a desert existence similar to that of the gazelle of the Sahara.

The Onager of Syria and Palestine inhabits the deserts between Bagdad and Palmyra.

On the plains the desert grasses become parched and withered, and in early summer the animals migrate to the hills. They usually associate in small bands, but herds of a thousand head have been observed in Afghanistan.

Unlike the Kiang, the Onager is exceedingly suspicious, very shy, and very difficult to capture or shoot. Like all desert herbivorous animals, the Onager is famed for speed. Those who have aspired to capture one of these fleet creatures by pursuing on horseback until the Onager is exhausted, have found it quite impossible unless relays of horses are provided at objective points, and then the chase is not often successful.

## WILD ASSES OF NUBIA AND SOMALILAND

*(For illustration see Color Plate VI)*

The African ass is found in the wild state in Abyssinia, Nubia, and other parts of northeast Africa lying between the Nile and the Red Sea, and is regarded by zoölogists as the progenitor of the domesticated asses. Its color and markings approach closely to those of the domestic ass. It possesses the distinctive shoulder stripe, running from the withers down to the fore leg, usually observed on the donkey. The ears of the African ass are somewhat longer than those of the Asiatic ass. The bray of the African is identical with that of the domesticated ass and the common mule. The skeleton of the African ass shows only five lumbar vertebræ, as compared with six in the horse. The chestnuts found on the inside of the hind legs of the horse are absent in those of the ass.

The ass of Somaliland differs somewhat from the usual type of African ass in being of a more grayish color and with the absence of the stripe across the shoulders and in the presence of black stripes and markings on both front and hind legs. It also has smaller ears and a tendency to grow a longer mane.

The presence of the leg stripes has suggested to investigators a near relationship to the zebra of southern and southwestern Africa, with which the ass agrees in general form, in the shape of the head, in the length of the ears, and in the narrowness of the hoofs. The ass, however, has lost, if it ever had, the general striping of its southern congener, probably in the same way that the coloring of other animals which have taken up a permanent residence in desert areas has changed to meet the new conditions.

The retention of leg stripes by the ass is in marked contrast to the quagga and bontequagga of southern Africa, in which the leg stripes were apparently the first of the dark markings to disappear in a new environment.

The African wild asses of the present day are divided into races according to their markings.

The Nubian ass, which inhabits the country on both sides of the Atbara River, in the eastern Sudan, to the south of Nubia proper, has a distinct shoulder stripe, but with no dark markings on the legs, with the exception of a patch on the fetlocks.

The Somali ass, on the contrary, has quite lost the dorsal and shoulder stripes, but has the legs fully barred.

In general character wild asses resemble the domesticated breeds, differing mainly in having more slender legs and greater speed. The domestic ass, particularly the small donkey and burro type (see page 488), is known, if not notorious, for his lack of speed, or, if he has it, for his unwillingness to give evidence of it.

The asses, both wild and domestic, male and female, are characterized by a raucous bray. Unlike the Kiang, they have a great aversion to entering water. They subsist on the dry grasses found in the desert areas of northeastern Africa, and this probably accounts for the ability of the domesticated donkey to get along comfortably on the poorest fodder and trash to be found about a farm. Of course, this does not apply to his aristocratic kinsmen kept as sires on breeding farms.

Both the Nubian and Somaliland asses attain a height of about 12 hands. Their conformation clearly establishes their right to be considered as of the original stock from which have come the domestic asses, even though the latter have changed much in form and coloring under the influences of their new environments. The extent of these changes in some cases almost gives certain asses the right to new classification, so far as their movements and their gaits are concerned, but the bray remains of one accord.

Throughout the East the ass is used extensively for saddle purposes. The Syrian ass is especially renowned as a saddle animal and is credited with ability to accomplish long journeys at considerable speed.

The small, patient ass, however, is associated quite definitely in the minds of travelers with the lowly tasks of agriculture and as a burden-bearer, especially as a distributer of wood and water.

The movements of commerce and the trend of populations on the earth's surface comprise the interesting and important events of history, even though they follow so often in the wake of war.

The blending and intermingling of peoples have sometimes created practically new nations, and it is the same with animals, to a certain extent, not in creating new species but in so modifying the old as to make it appear incredible that they should have come from the original stock.

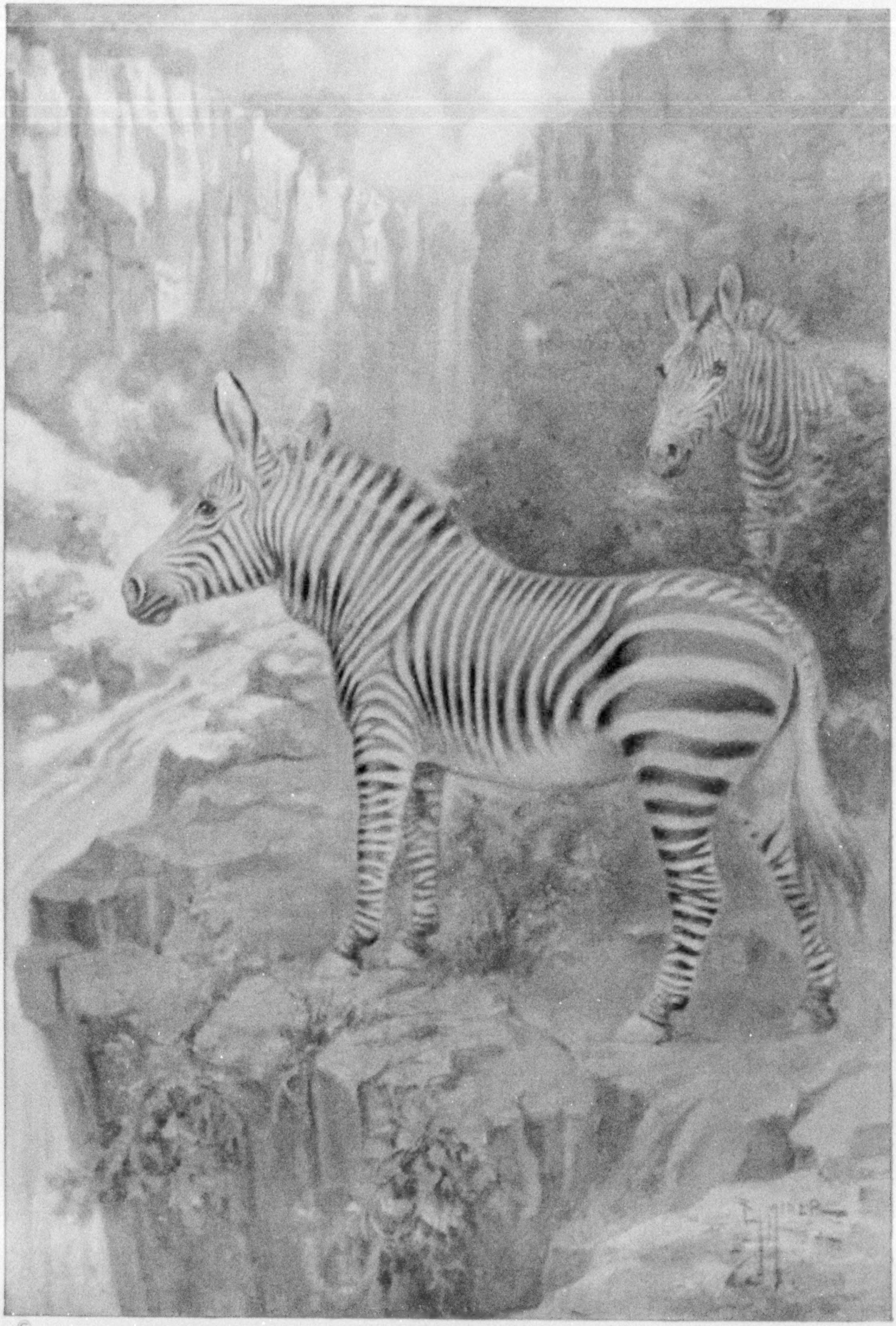
Scientists adhere closely to anatomical significations in their determination of lines of ancestral descent. Without claim as a scientist, my lifelong studies of the horse and his congeners has brought the conviction that the modern world is more indebted to northern Africa for the modern horse, jack, and mule than to all the rest of the world.

Creation of types is not the work of a day or a year; yet so rapid has been the development of breeds of modern horses and mules that we should be able to accept available evidence as to some of them.

To my mind, nothing is more certain than that the native ass of northern Africa was the source of supply of the domesticated ass to all the countries trading along the Mediterranean, first to the East and later to the West, and that the bones of the forebears of the famous asses of Syria, Palestine, Persia, Damascus, and Bagdad have fertilized the soil of Africa in common with those of the forebears of the jacks of Spain, Italy, France, and Kentucky.

The virility of the ass, or, as we now prefer to know him, the jack, has been remarkable through the centuries, not only for maintaining the purity, the quality, and the abundance of his own race, but for adding to the world's available animals that unique, patient, and useful aid to mankind, the mule.

XUM



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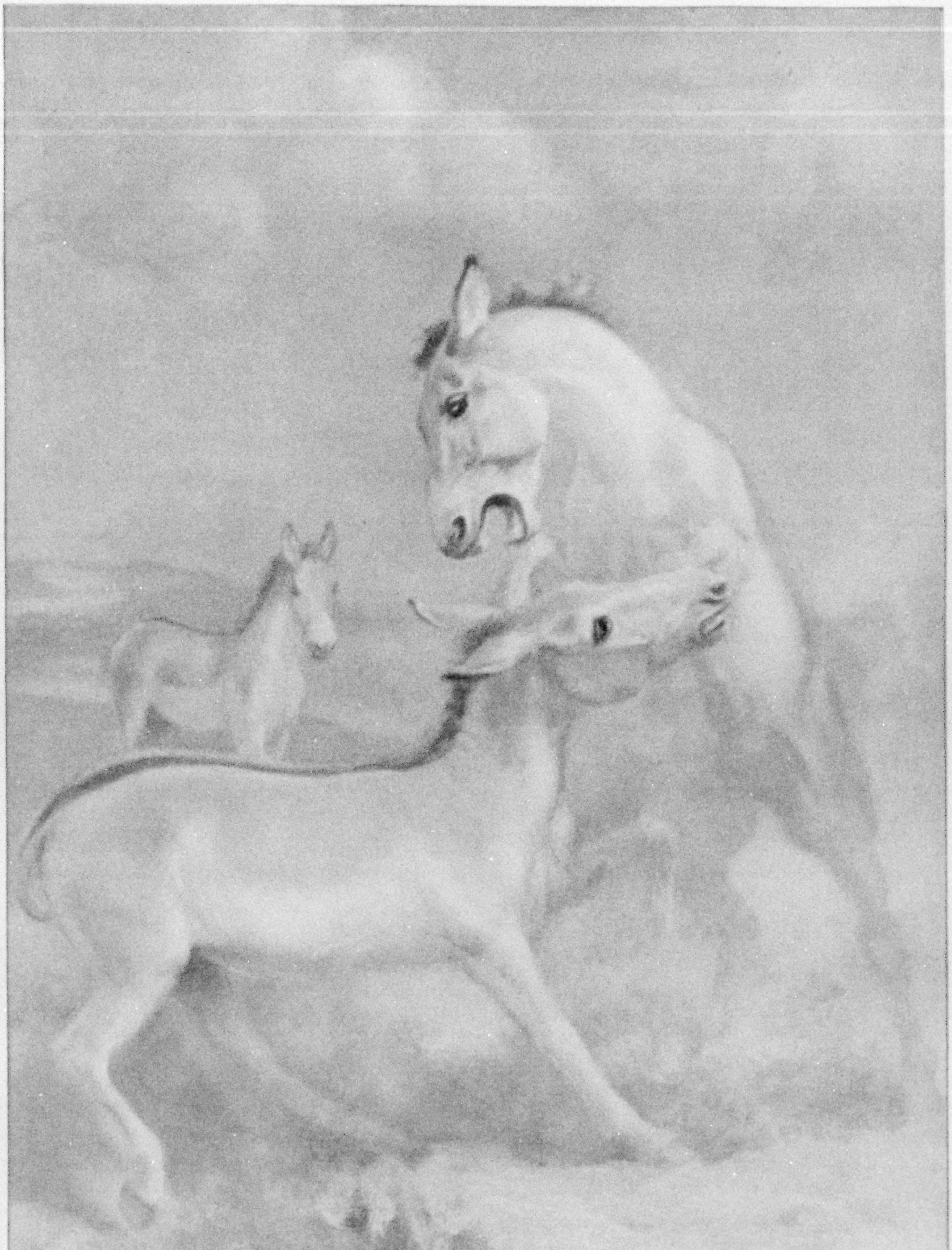
MOUNTAIN ZEBRA



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ONAGER (left foreground) AND KIANGS

## THE DONKEY

*(For illustration see Color Plate VI)*

Donkey is a nickname for the ass in all parts of the world. Burro is the common name for the small ass introduced in America by the Spaniards, mainly through Mexico. The Jacks of Poitou in France mark the maximum of the species in point of size, while the little Mahratta Donkeys of western India and Ceylon represent the opposite extreme, some of them being only 30 inches, or 7½ hands, in height.

The small gray donkey of northern Africa was without doubt the progenitor of the Spanish Burro, which accompanied the conquistadores to Mexico and South America and which has played such an important part in the settlement of the great West.

The true Wild Ass is found only in northern Africa. There is no evidence that the wild animal ever existed to the eastward of the Red Sea, and it is regarded as reasonably certain that the asses, or donkeys, were domesticated on the shores of the Mediterranean Sea, and found their way to the East, and later to all parts of the world. The Donkey is essentially a southern animal, partial to hot and dry countries.

The domesticated asses are now spread over southern and central Europe, the whole of eastern and southern Asia, northern and eastern Africa, and North and South America.

By careful selection, the Donkeys are now recognized as distinct breeds of quite different types. Syria is said to possess four quite distinct breeds: a light and graceful type, with a pleasant, easy gait, used by ladies; a so-called Arab breed, reserved entirely for the saddle; a stouter and stronger type, used for agricultural purposes, and the large Damascus ass, characterized by great length of both body and ears.

Many of the Damascus Donkeys are white and apparently akin to those of Bagdad, which have been highly esteemed for centuries, both on account of their color and speed.

The Syrian Donkeys are credited with excellent saddle qualities. While their speed is not great, they will continue an easy trot and canter for hours. In Biblical times many herds of asses were maintained mainly for their milk.

While the asses of Spain and France have taken on dark colors, the usual colors of the donkeys of Egypt, Persia, India, and other parts of the world are of a grayish tint, many being almost white.

The Donkeys or Burros, as quite universally called in the Western States and Mexico, have been clubbed, beaten, cajoled, and threatened ever since they landed upon the shores of the Gulf of Mexico; yet they have gone along patiently, carrying the burden of the white man through three centuries.

Not big enough to cut much of a figure in harness, the little Burro has shown masterful qualities under the saddle and aparejo. The quantity of wood, hay, and other articles of barter and trade which a Mexican packer can tie on the back of a diminutive Burro is and always remains beyond belief to those who have not personally seen the performance.

As the friend and burden-bearer of the army of prospectors, from the eastern slope of the Black Hills to the Pacific and from Canada to Mexico, the Burro shares the honor of discovery and development, for without his uncomplaining services that vast region would have remained long unexplored.

In a vastly different field of usefulness the Burro shares with the Shetland pony the honor of being the children's friend. In America the number of Shetlands is small in comparison to the number of Burros, and each Burro seems able and willing to carry as many children as can pack themselves between his ears and tail.

Then, too, they are very patient and gentle and seem able to sustain life on the smallest possible amount of pasturage.

In Mexico the Burro has been mated with Mustang mares and has produced a remarkable breed of hardy, active, small mules, which were used in the freight "schooners" of the Southwest for many years before the railroads were built. It was not uncommon to see from twelve to twenty in one team, hauling a large wagon with a trail wagon attached. No forage was carried for them. After the day's drive they were turned loose for the night, under a herder, to procure their provender by grazing.

Being quick and active, they were superior in every way to their progenitors, the Mustang and Burro, which in combination were able to produce a better draft animal than either of them individually.

## SHETLAND PONY

*(For illustration see Color Plate VII)*

The Shetland Islands are situated about 100 miles off the north coast of Scotland. Only a few of the large group of islands are inhabited, for the land is poor and unproductive. Just how much environment has had to do with the size and character of the ponies there and whether they are from original Shetland stock remain, like similar questions in all parts of the world, without possibility of definite solution.

The Shetland ponies have long existed under most adverse conditions, being close companions of the natives of the islands, not infrequently sharing their huts and even their provisions.

The ponies are characterized by diminutive size, hardiness, and good dispositions. They are accustomed to deprivations, for grazing is scarce, which accounts somewhat for their small size.

The Shetland is of the draft-horse type in miniature and gives the maximum of horsepower in the smallest compass. While not used to any extent for farm work, the Shetlands have long been employed for draft purposes in coal mines, and, notwithstanding their diminutive size, they are able to draw half a ton of coal and cover from 20 to 30 miles a day.

They are wonderful weight-carriers, a Shetland three feet in height being able to carry a full-grown man on his back for long distances. The crofters habitually use them for packing peat, and their customary load is from 120 to 140 pounds. This is remarkable when

it is considered that the average height of these ponies is about 40 inches, and some very much less. None is eligible to registration in the Shetland Pony Stud Book which exceeds 42 inches in height at four years of age.

When used for draft or as a pack animal, the Shetland comes into his own at once. Weight for weight and inch for inch of height, he can hold out against all the horse world. Working under stress of weather conditions and insufficient forage, he has no equal. Measured all around, his good qualities so outweigh any deficiencies that the latter are completely forgotten.

It is now usual to give the ponies a ration of hay in the winter, when the vegetation is covered with snow, and obviate the losses by starvation, which formerly were quite heavy in severe weather. Otherwise, their conditions of life on the islands differ little from those that prevailed three centuries ago. When not at work, their lives are usually spent in the hills, grazing.

When taken from their native islands to breeding farms where good forage abounds, their tendency is immediately to lose their diminutive size, which is objectionable when they are intended for the use of small children. If not pampered by good pastures and warm stables, they retain their diminutive characteristics.

They do very well on land unsuitable for grazing steers for market. They do not require as much attention as sheep or goats, do not eat any more, and sell at greater profit.

Bay, brown, and dull-black are the most prevalent colors, but there is often a mixture of white. Piebalds find ready sale for children's ponies, especially in America. In winter the coat is long and shaggy, but in summer the hair is short and sleek.

The demand for Shetlands for children has been very large for many years. Any kind of a pony looks good to a child, and as a mere toy they seem to answer, regardless of the fact that a herd of Shetlands, taken at random, will show more defects as saddle animals than almost any other breed of horses.

Some judgment is required in selecting a pony, but parents generally are solicitous only about a kind disposition. The Shetlands are as sure-footed as mules and as patient as donkeys, intelligent and faithful. Their docility enables them to put up with the whims of children without resentment or rebellion.

Few of the Shetlands have what is termed the saddle-horse conformation; they are usually of the blocky type. They are short in the leg, wide in the body, short in the back, with large bones, thighs, and arms, all of which qualities are in the direction of great strength for size.

When children have passed 12 years of age and it is desired that they shall become accomplished horsemen, the Shetland should be relegated to the use of the younger members of the family and a selection made from one of the more active breeds of ponies or, preferably, of a small horse of saddle type.

In recent years numerous breeding farms devoted to the Shetland pony have been established in England and Scotland, as well as on some of the detached, small islands. In America, also, breeding of the Shetlands has received much attention in many States and the total number has assumed considerable proportions.

All breeders wish to give proper care to their stock and all have the same experience with the Shetland, which insists upon reducing his most valuable asset, his diminutive size, by getting bigger as soon as fed like other animals. They are lovable little beasts and everybody wants to pamper them.

It is generally believed that ponies are more intelligent than horses. Whether this would prove true where both are reared under exactly similar conditions may well be questioned.

The Shetland, on his native islands, is foaled and grows up under very hard conditions of life, and it is doubtless the necessity for looking out for himself which has developed exceptional intelligence, transmitted later as a heritage to the new foals.

## NORWEGIAN DUN

*(For illustration see Color Plate VIII)*

Tracing the history of the horse in all countries has been a favorite study of scientists. Inclined to regard the Norwegian Dun as one of the original breeds or, in any event, as a near relation, they have expended much effort in trying to identify the particular strains involved, but no very definite result has followed.

The color of the Norwegian is very much like that of the wild Tarpan (see Plate I); and this, taken with the dorsal stripe and black fetlocks, with frequent traces of a shoulder stripe and barring of the upper part of the legs, lends encouragement to the view that they are akin to the original stock of northern Europe.

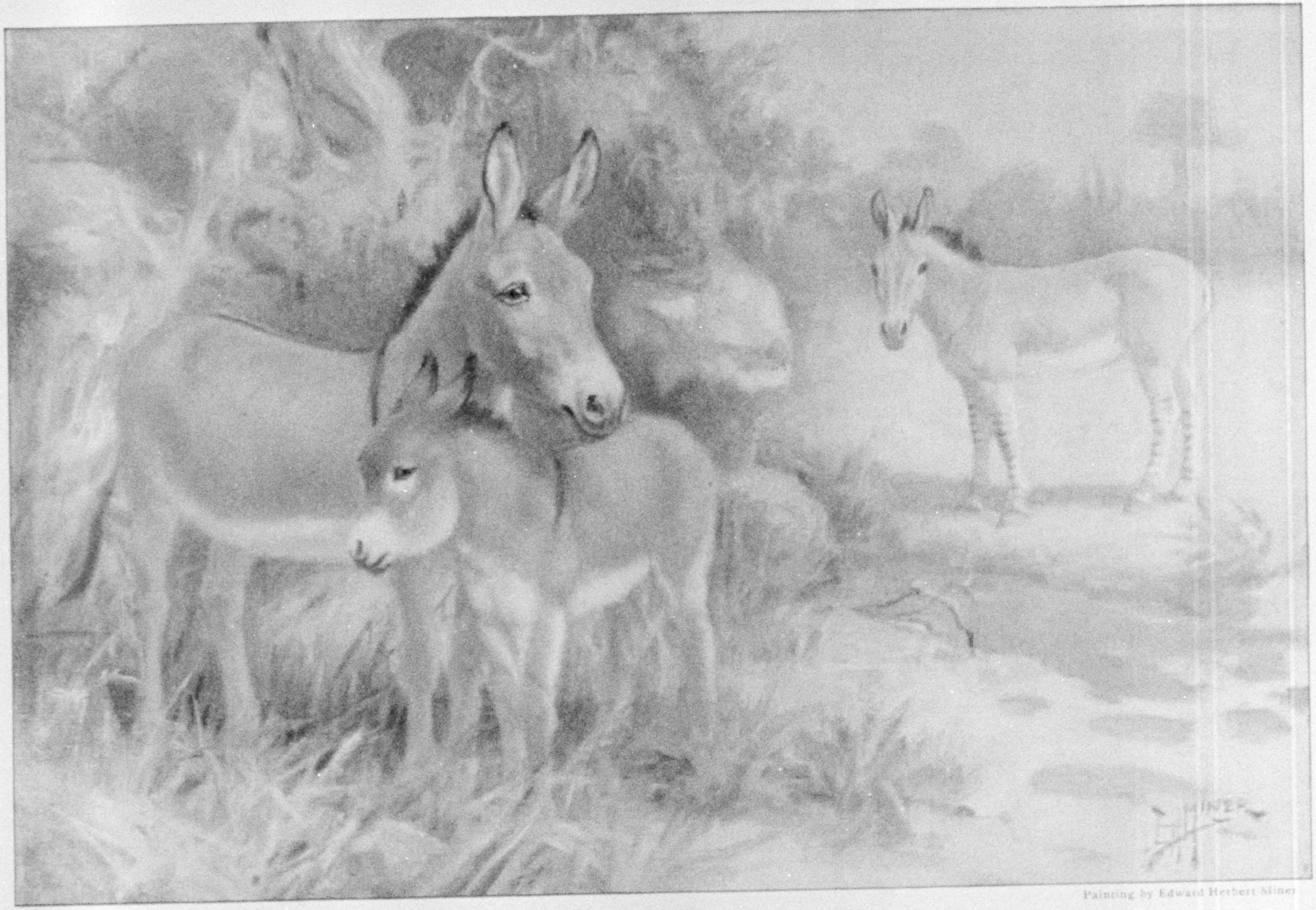
On the other hand, it has been suggested that the blood of the north African horse, first carried from the Mediterranean into central Europe, and thence to Norway, has asserted itself in the common markings and absence of certain leg chestnuts as the probable influential strain in perpetuating the existing Dun breed.

The evidence in neither case is sufficiently definite to prevent investigation from running into numerous blind trails.

From the earliest recorded Scandinavian history there have existed horses in Norway, the prevailing color being dun, with the dark stripe along the back. One of the early writers remarked that while the horses of Sweden were particularly well adapted for use in marshy and forest country, those of Norway, although of moderate size, were strong, courageous, and excellent for service in mountains and rocky ground.

Notwithstanding all the years of opportunity for admixture of other blood, the modern horse of Norway still shows the prevailing color, dun varying from cream color to dark dun. None is considered purely bred unless it has the spinal and leg stripes, the facial stripes being extremely rare.

Whether the dun color comes from its relation to the wild Tarpan breed or from affinity with the dun-colored horses of Spain and



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NUBIAN AND SOMALILAND WILD ASSES

SHETLAND PONY

Painting from life by Edward Herbert Miner

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southern Europe, derived originally from Africa, the Norwegian Dun continues to be a remarkably prepotent horse, of moderate size, well rounded, with clean head and legs, strong, courageous, and very sure-footed.

Scientists are inclined to the belief that the wild Tarpan is related not only to some of the existing horses of western Europe, but also to their prehistoric ancestors. This is one of the reasons for the belief that the Norwegian Dun represents a very ancient type and inherits its color either directly from or by reversion to the wild Tarpan.

The Norwegian Dun is a trotter, and this led at one time to the importation of a number of mares from Norway to England to be mated with Norfolk stallions, an English breed of trotters of considerable renown.

## ICELAND PONY

*(For illustration see Color Plate VIII)*

Iceland was occupied by adventurous Vikings at the end of the ninth century, but the first colonists were nothing more nor less than sea-rovers or pirates. Many of them, of Norwegian extraction, had previously settled in the British Isles, calling themselves Norsemen. Many had lived for a generation in Scotland, Ireland, the Hebrides, and the Orkneys before settling in Iceland.

It is probable that the original breed of horses in Iceland was due to the Norse migration and was of mixed origin, in which the Hebridean and Scandinavian blood predominated, but there has been no admixture of foreign blood since the first settlement of Norsemen.

The Celtic pony of Iceland is similar to the ponies existing at an early day in northern Ireland and the Hebrides. It is characterized by its small size, a small head, and slender limbs, and sometimes by the entire absence of the chestnuts on the hind legs and the peculiar short hairs in the upper part of the tail.

After isolation for upward of a thousand years, the Iceland ponies retain a marked degree of prepotency when mated with other breeds.

It is entirely probable that the Icelandic and Shetland ponies were once identical, but the Shetland has been subject to admixture of other blood from Scotland and elsewhere for many centuries. The ponies of Iceland have been very isolated until within the past 50 years, when some were exported to England for use in the coal mines.

A typical Celtic pony resembles closely in markings and color the wild horse of the Altai variety (see Plate I), being of a yellowish dun with a dark stripe on the back and sometimes with indications of stripes on the shoulders and in the region of the knees and hocks.

The hair of the Celtic pony is rather longer during winter, especially under the jaw, over the hind quarters, and upon the legs. The mane grows from nine to ten inches every year and reaches a considerable length, only a portion being shed.

A remarkable feature of the Celtic pony is the tail. The dock or solid part is relatively short, but grows long dark hairs until they trail on the ground. During winter and spring the upper third of the dock, about four inches, bears stiff hair from three to six inches in length, which forms a fringe or tail lock.

Usually the upper portion of the dock in other horses is covered with short hair like that over the hind quarters, but in the Celtic pony the wiry hairs extend to the top of the dock.

The presence of this unusual bunch of hair at the root of the tail serves a very useful purpose to the pony during snowstorms. By turning its tail to the direction from which the storm approaches, the bunch of hair spreads out in the form of a disk, to which the snow adheres, forming a shield which prevents snowflakes from getting under the tail, where they would soon melt and run down on the inner surface of the hind quarters, which, being only thinly covered, would produce chill.

This protection, with the heavy mane and long hair on the back and hind quarters, enables the Icelandic pony to withstand the severest weather without serious results.

Without their ponies, the people of Iceland would have had to confront almost insurmountable obstacles, for the population was never large enough to utilize man-power for the heavy work performed by the hardy little animals. The food supply of the population is entirely dependent on the ponies, which transport the wool to the coast and bring fish, grain, wood, metal, and nearly everything else back to the farms that produce mainly sheep and potatoes. The fish come from the surrounding seas, all else from abroad.

Iceland is about one-fifth larger than Ireland, yet the ponies are the only reliance of all the interior. The pony pack-trains are sometimes tied in a column, tail to head, and move along over mountains, through marshes, and across rivers, indifferent to fatigue, requiring nothing more than a dog to keep them in the trail.

Everybody rides. To walk is considered derogatory to one's dignity. To pay a call on foot is regarded as a breach of good manners. Even the beggars, who through misfortune or laziness have not sufficient for their families, ride around to the neighbors to receive alms. Without the ponies, one simply could not exist in the interior, far back from the coast.

The ponies are not fast, but no work to which they are normally subjected seems too hard for them. When it is considered that they live by grazing in summer, with small amounts of hay, supplemented by the heads of dried codfish in winter, their endurance is truly remarkable. They seem to thrive on such diet, for they have often been observed to make their way to the shore, looking for dead fish cast up by the sea.

While nearly all colors are represented in Iceland ponies, even piebalds occurring at times, the most typical color is the light-dun with a dark stripe along the back.

Mares are generally used for riding purposes, and the best of them are taught to amble, if not born with the tendency to that easy gait, which makes long journeys more comfortable.

## THE WELSH PONY

*(For illustration see Color Plate IX)*

The British Isles have always been possessed of numerous breeds of ponies, each having its admirers. The New Forest, the Exmoor and Dartmouth, the Cumberland and Westmoreland, the Irish Connemara, the Welsh and the Shetland are rivals for public favor, but the two last named are justly famed, each in its own field.

The Welsh pony is a typical range horse of small size, and has been held in high esteem since a very early period, for his soundness of constitution and his powers of endurance.

These are qualities which are usually developed in animals brought up on the open range. It has long been observed that army horses in campaign suffer very little from ordinary diseases, and that the great losses incident to hard service are usually attributable to starvation and overwork and not to life in the open air.

The writer commanded a troop of cavalry during the last Indian war, involving a campaign in midwinter, and did not lose a horse. It was observed in the spring, when the horses began to shed, that nature had provided them with exceptionally heavy coats of soft hair.

For centuries the unfenced lands of Wales were the grazing grounds of numerous herds of ponies, which adapted themselves to the rough hills as well as to the wet and boggy waste lands, and became noted both for hardiness and sure-footedness in any and all situations.

The true type of Welsh pony resembles a coach horse in miniature, and usually has a good head, neck, and forehand, well-formed legs, and considerable speed at a trot, with very free action.

Many efforts have been made to improve the breed of Welsh ponies by increasing their size. In the first quarter of the eighteenth century there was a small race horse in England that had beaten every animal that started against him. When retired from the turf he was purchased and turned out to run on the range in Wales with the semiwild ponies. So remarkable was the improvement in the herd headed by this stallion that the value of all the ponies of the locality where he ranged was materially increased.

More than 100 years later many small Hackney stallions were taken to Wales to cross with the ponies to meet the demand for fast trotting harness and saddle horses.

All these efforts were more or less local in application, and a Royal Commission on land in Wales, a little more than 20 years ago, reported the old conditions little changed. It was found that on the mountains of North Wales, which were formerly famous for wild herds of "Merlins," a name given to the descendants of the small race horse turned out with the ponies more than 200 years ago, little improvement had taken place, due to the careless treatment of the herds of ponies, which are allowed to ramble at will, winter and summer, to survive or starve, according to weather conditions. No attention had been paid to breeding, the herds being allowed to run wild.

The endurance and constitution of the Welsh ponies are proverbial, and if they had been sheltered in winter and some attention given to selection in breeding, an entirely different story could have been told. There was abundant material to make use of and the breeding might have become a source of continuous profit.

Attempts have been made to improve the range ponies by introducing Arabian stallions, but the result did not compare with that which was produced by Thoroughbred stallions mated with selected Welsh pony mares. Some of these were developed to sufficient height for Polo ponies, but the present tendency to use Thoroughbred horses, without regard to height, discourages the breeding of ponies for the game.

While the pure-bred Welsh pony is not much larger than the Shetland, he is in reality very much more of a horse and would not be recommended for the use of small children.

The pure-bred Welsh pony is about twelve hands, or 48 inches, in height and usually bay or brown in color. Many creditable performances in the way of endurance rides have been reported, one, for instance, where a full-grown man rode a Welsh pony 10 miles in 47 minutes, taking 30 jumps in the course of the run.

## THE ARABIAN HORSE

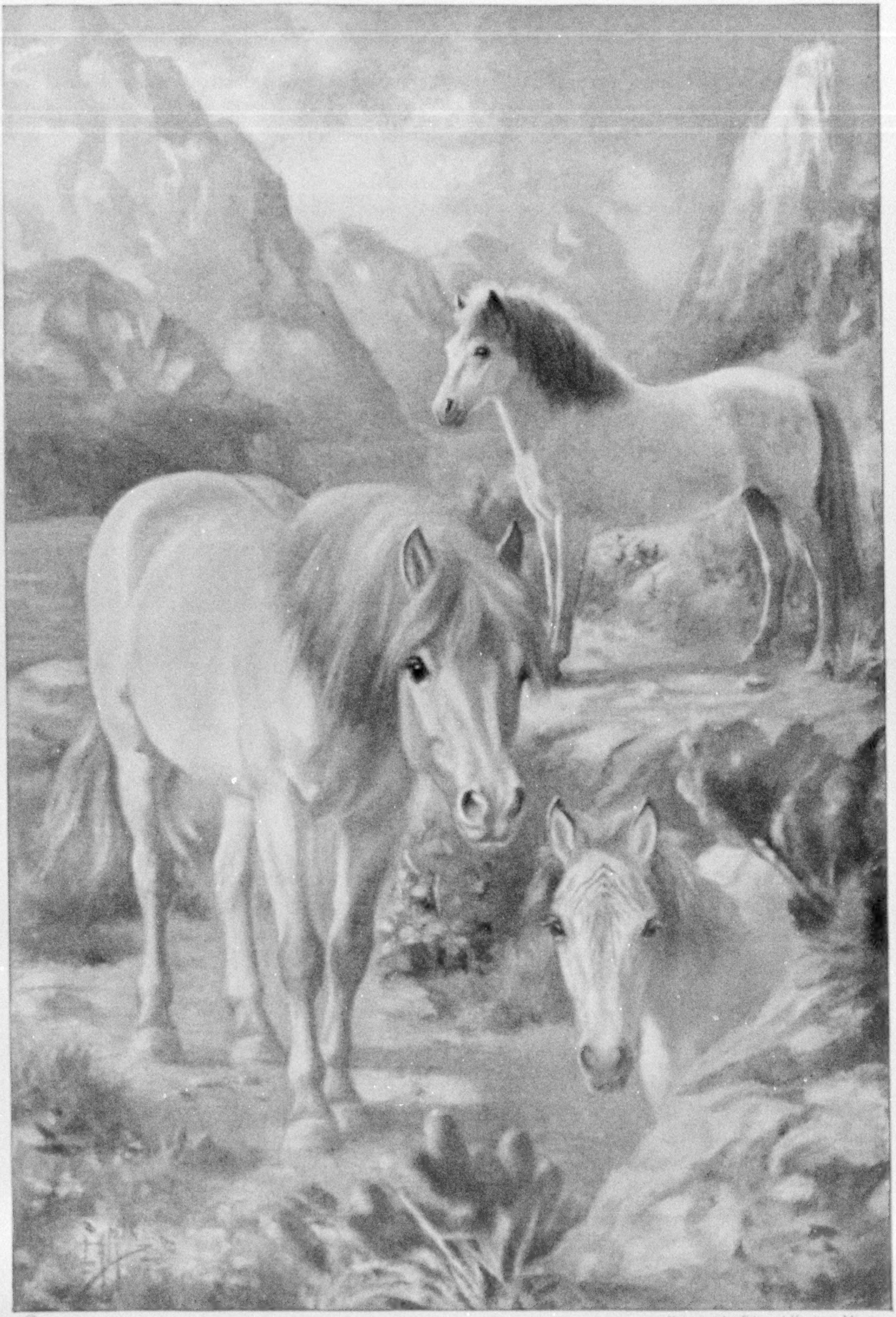
*(For illustration see Color Plate X)*

The early history of the Arabian horse is shrouded in that impenetrable veil beyond which investigators have been unable to discover a satisfactory path to knowledge.

Recognizing the Thoroughbred as a fixed type of highest quality, resulting from painstaking and careful mating to obtain particular results, many students are agreed that the Arabian might have been originated and perpetuated in the same way. On the other hand, the Arabian and the Barb of northern Africa are so alike, and yet so distinct in every possible way from the ancient horses of the steppes and of the European areas, that admirers of the Arabian and Barb are unwilling to assign them to any but a distinct classification of their own.

The writer is thoroughly in sympathy with this latter view, and the only question which seems open to legitimate discussion is whether the Arabian and Barb are not identical in species and race, and if that be decided in the affirmative, to determine which is the more ancient in origin and to what region it should be assigned.

There have been many hundreds of books written on the horse. A lifetime devoted to the study has brought the conviction that a large majority of these writings, as far as examined by me, contained little original matter, and that those which may be regarded as authoritative must be considered in the broad light of recorded



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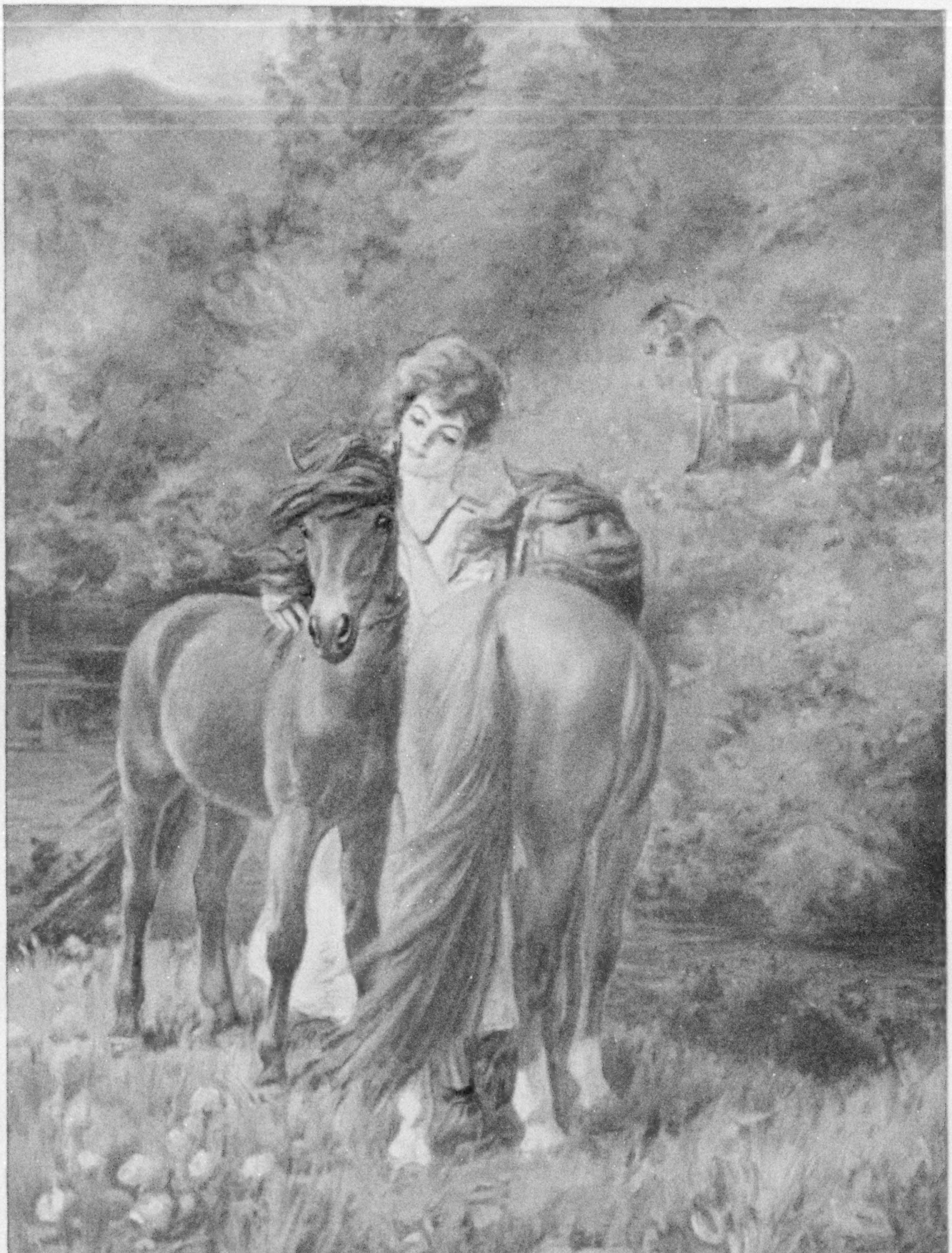
NORWEGIAN DUN AND ICELAND PONY

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WELSH PONY

history and of scientific discoveries in order to assign a correct value to their conclusions.

The preponderance of evidence favors the belief that the Arabian horses were obtained through Egypt, from the Libyan tribes of northern Africa, and that by long and careful mating the superior type of Arabian horse has been maintained through many centuries.

This conclusion may be justly reached by considering only the caravan movements and war invasions. When to those are added the water-borne commerce of the Mediterranean and the probabilities of the transfer of the Barb to the east, and in the course of centuries back to the west and north of that great inland waterway, the matter resolves itself into an entirely possible solution, conformable to the history and development of European civilization.

It would be difficult for any horseman to adopt the suggestion of some scientists, that the Arabian might have been descended from the Tarpan, the Onager, or the Zebra. Certainly the Onager and Zebra have been known for more than a thousand years, and no one has been able to transmute them, by interbreeding, into any kind of a horse. Had they any legitimate claim to such noble ancestry, the Arabians would have shown dun colorings, stripes, and bars, all of which are conspicuously absent.

Unhesitatingly the Arabian and Barb are assigned to their own species unfouled by such ignoble forebears.

The Arabian, and his undoubted kinsman the Barb, are desert horses, accustomed to subsist upon scanty food and little water. They are continually exposed to the heat of the desert sands, yet are hardy and capable of covering tremendous distances carrying loads equal to one-fourth their own weight. They are bred and raised in close contact with the families of their masters, and are renowned for affection, gentleness, and tractability.

The characteristics of the Arabian horse differentiate his type in the most marked manner from other breeds. His difference from other horses is not alone in conformation, but in the anatomical formation of the skeleton, which contains fewer vertebræ in the back and tail than other horses. The usual callosities of the hind legs are very small and sometimes nonexistent, and those on the front legs are also of small size. The ergots on the fetlocks are very small, sometimes hardly distinguishable.

The Arabian is distinctly a small horse, of from 14 to 15 hands in height, usually higher at the croup than at the withers.

The head is large in its upper half, in proportion to the size of the horse, and it diminishes rapidly to a small and fine muzzle. The lips are thin and fine. The nostrils are long, thin, and capable of great dilation. The face is slightly dished below the eyes. The large, lustrous eyes are set far apart. The cheekbones are wide apart at the throat, enabling the muzzle to be drawn in without compressing the windpipe and interfering with breathing when running. The ears are small and pointed and of great flexibility.

The neck should be long, arched, light, and run back into the withers, which should be high and well muscled. The shoulders should be long, deep, and powerful. The back is unusually short, the haunch longer in proportion and quite horizontal; the tail set on high and carried in the air when the animal is in motion.

The fore legs are characterized by a long and muscular fore arm, large knees, short cannon bone, with heavy tendons; fetlock joint large; pasterns long and sloping; hoofs hard and round. The hind legs are well muscled, with hocks large, almost abnormal in size; shank bone flat, clean, and short, with large tendons. The pasterns are long, sloping, and muscular and the fetlock joint of exceptional size.

The mane and tail are long and fine; the hair of the body soft and silky. In color Arabians are bays, grays, chestnuts, browns; solid white is prized, but rarely found. Among Arab proverbs is one regarding color: "The fleetest of horses is the chestnut; the most enduring the bay; the most spirited the black; the most blessed the one with a white forehead."

A horse that clears only 10 feet at his first forward spring is set down as heavy; if he covers 15 he is considered strong, and if he exceeds the latter he is deemed of superior quality.

A horse from the mountains is preferred to a horse from the plains, and one of the latter to one from marshlands, which is deemed fit only to carry a pack. The war horse must have good sight and be able to travel at night.

The highest virtue in a horse, in the mind of the Arab, is endurance, to which, in order to constitute a perfect animal, must be joined strength and wind.

To summarize in the words of Abd-el-Kader: "If in the course of your life you alight upon a horse of noble origin, with large, lively eyes, wide apart, and black, broad nostrils, close together; whose neck, shoulders, haunches, and buttocks are long, while his forehead, loins, flank, and limbs are broad; with the back, the shinbone, the pasterns, and the dock short; the whole accompanied by a soft skin, fine, flexible hair, powerful respiratory organs, and good feet, with heels well off the ground, hasten to secure him if you can induce the owner to sell him, and return thanks to Allah morning and night for having sent thee a blessing."

## THE HACKNEY

*(For illustration see Color Plate XI)*

The Hackney has long enjoyed preeminence as the head of the heavy harness breeds of horses of the world. The Hackney, like the Thoroughbred, is of English origin and of composite blood, which, after two centuries of breeding, reproduces itself to perfection in both form and color.

It is astonishing to what extent Arabian horses have influenced the improvement of many different types of horses, resulting in the creation of most important breeds. Of these the Thoroughbred and the Hackney are the most important examples.

Mr. Darley imported into England during the reign of Queen Anne an Arabian horse, known since as the Darley Arabian, whose blood lines

are treasured as a priceless heritage in the family tree of long lines of Thoroughbreds and Hackneys.

In 1714 a mare, Betty Leedes, was bred to the Darley Arabian, and the result of that mating was Flying Childers, the fastest horse of his day. A son of Flying Childers, Blaze, foaled in 1733, also famous for his speed, was retired to the stud in Norfolk, noted for its good native stock.

The celebrity of Norfolk as the home of the Hackney is mainly due to the happy combination of the blood of Blaze with that of the Norfolk mares, long valued for their harness qualities.

The Hackneys present a striking illustration of the high degree to which the art of horse-breeding may be carried, for many of them are magnificent animals, combining extremely high trotting action and fair speed with substance and quality.

While the Hackneys inherit their fine qualities and the high action which make them desirable as heavy harness horses, skilled training, bitting, and shoeing are necessary for their development, especially when destined for the show ring.

Hackneys are heavy in proportion to their height, when compared with other light breeds, their deep chests, well-sprung ribs, low flanks, and heavy croups and quarters all producing weight. In size the Hackney varies more than any other light breed. The small Hackney pony and the 16-hand Hackney horse are both registered in the same stud book. Most of the demand for heavy harness horses is for show-ring purposes, and, to meet this, pure-bred Hackneys are desired.

When carriage horses were in demand in this country, both pure-bred and gray Hackneys were supplied. Crossed with trotting-bred mares, Hackney stallions have sired many high-class carriage horses.

Among Hackneys, chestnut is the predominating color and is much preferred. Bays, browns, blue and red roans and, very rarely, grays are the other colors found. The French importers seem to have a preference for the browns. Roans are generally very hardy and useful horses of any breed, but sorrels and chestnuts, especially when accompanied by white stockings and blaze or snip, are far more showy in the ring.

In the show ring and for carriage use, Hackneys are usually docked and have their manes pulled.

The American Hackney Stud Book contains the records of 2,077 stallions and 3,469 mares. The practical withdrawal of carriages and all types of family vehicles of the horse-drawn variety from city streets and their replacement by motor cars has had a more marked effect on the heavy harness horses than any others.

American cities have grown abnormally in recent years. The nearer the street surfaces approach perfection for automobile traffic, the less satisfactory they are for the horse traffic. The general adoption of closed cars, which shelter the chauffeurs from storms and cold, has relieved those whose social duties admit of no considerations of weather from worry and anxiety over exposed horses and coachmen. In this particular and for long-distance runs, the horse seems destined to permanent replacement by the motor car.

## THE GERMAN COACH HORSE

*(For illustration see Color Plate XII)*

The German Coach Horse, as known in America, is the largest of any of the heavy harness breeds, weighing as much as 1,500 pounds in some cases, with fine harness form, but not quite up to some others in style, pace, and action. Some of them are inclined to the draft-horse type, but the more refined individuals are very impressive in coach harness and go well. They are usually of solid color, bay, brown, or black, with very little, if any, white.

Some Thoroughbred blood has been used in Germany, but as a rule the German Coach Horse shows very little of the influence of that cross.

The German states have been breeding large horses for mounting heavy cavalry since the days of the knights in armor. The origin of these horses is somewhat obscure, but they were evidently akin to the heavy Flemish horses, used so much for crossing in the days when a knight and his equipment weighed upward of 400 pounds.

For many years the present type of German Coach Horse has been kept pure in breeding and the stallions have established considerable prepotency, but, being a cold-blooded breed, they cannot be satisfactorily mated with mares of the draft type and should not be mated with mares larger than the horse.

Many high-class harness horses have been obtained by mating the Coach stallions with mares of Thoroughbred or Trotting blood possessing qualities lacking in the sire. The sires introduced in America have come, generally, from Oldenburg and East Friesland.

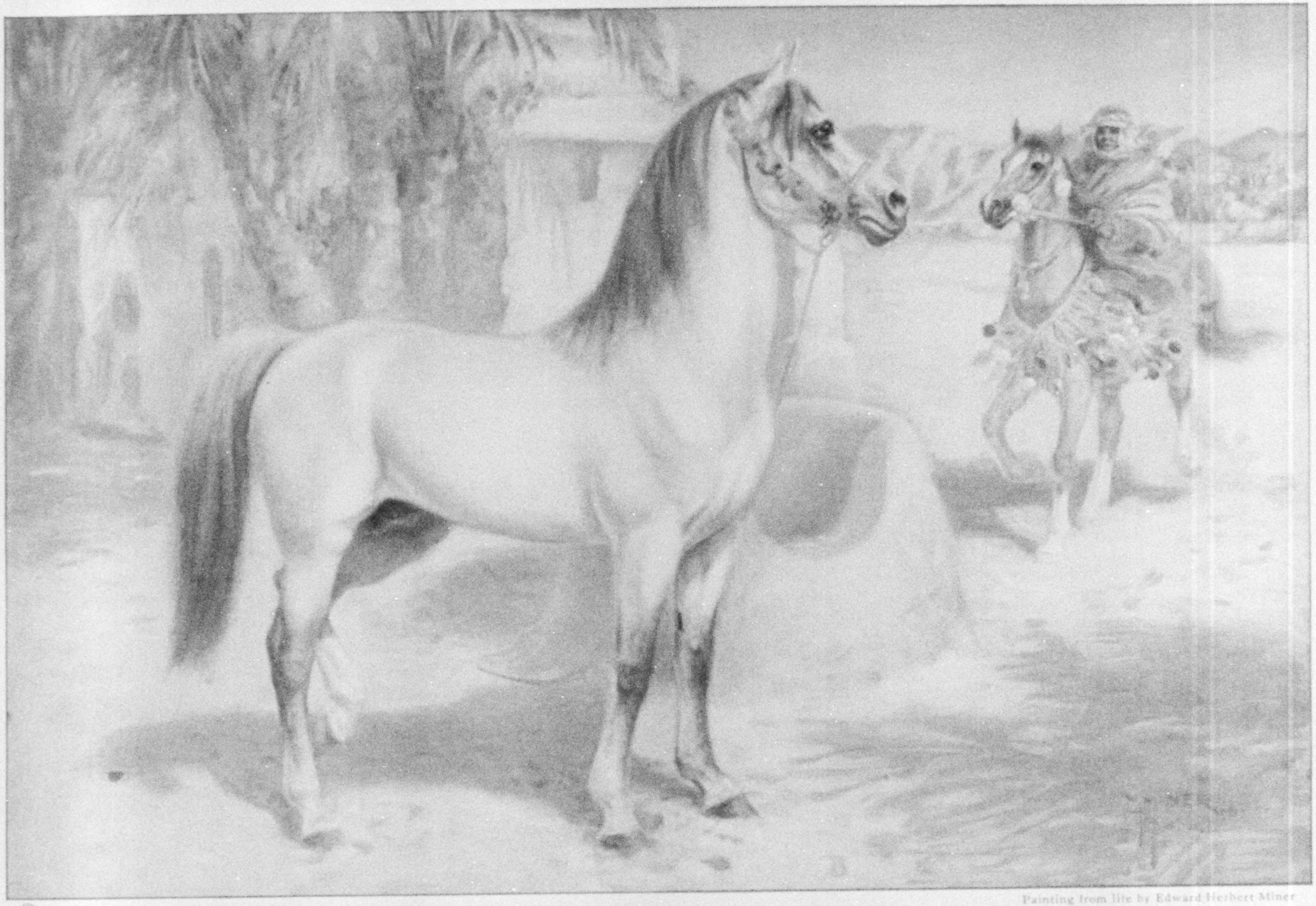
A stud book for these horses is maintained in America under the name of the German, Hanoverian, and Oldenburg Coach Horse Association. Only 2,955 stallions and 588 mares have been registered to date.

While the German Coach Horse is a very good general-purpose farm and heavy-harness horse, the stallions have not seemed to fulfill expectations in crossing on American mares. This is not surprising, for the only breeds that for a thousand years seem to have possessed the warm blood which "nicks" with other breeds are the Barbs and Arabs or those which carry their blood in prepotent quantities.

## AMERICAN SADDLE HORSE

*(For illustration see Color Plate XIII)*

The American Saddle Horse, as known for many years, was a horse of many gaits and of such refined training that he would change from one to the other at the indicated desire of his rider. The demand, especially in the North, for a walk, trot, and canter horse has led to some sacrifice of other gaits, whether



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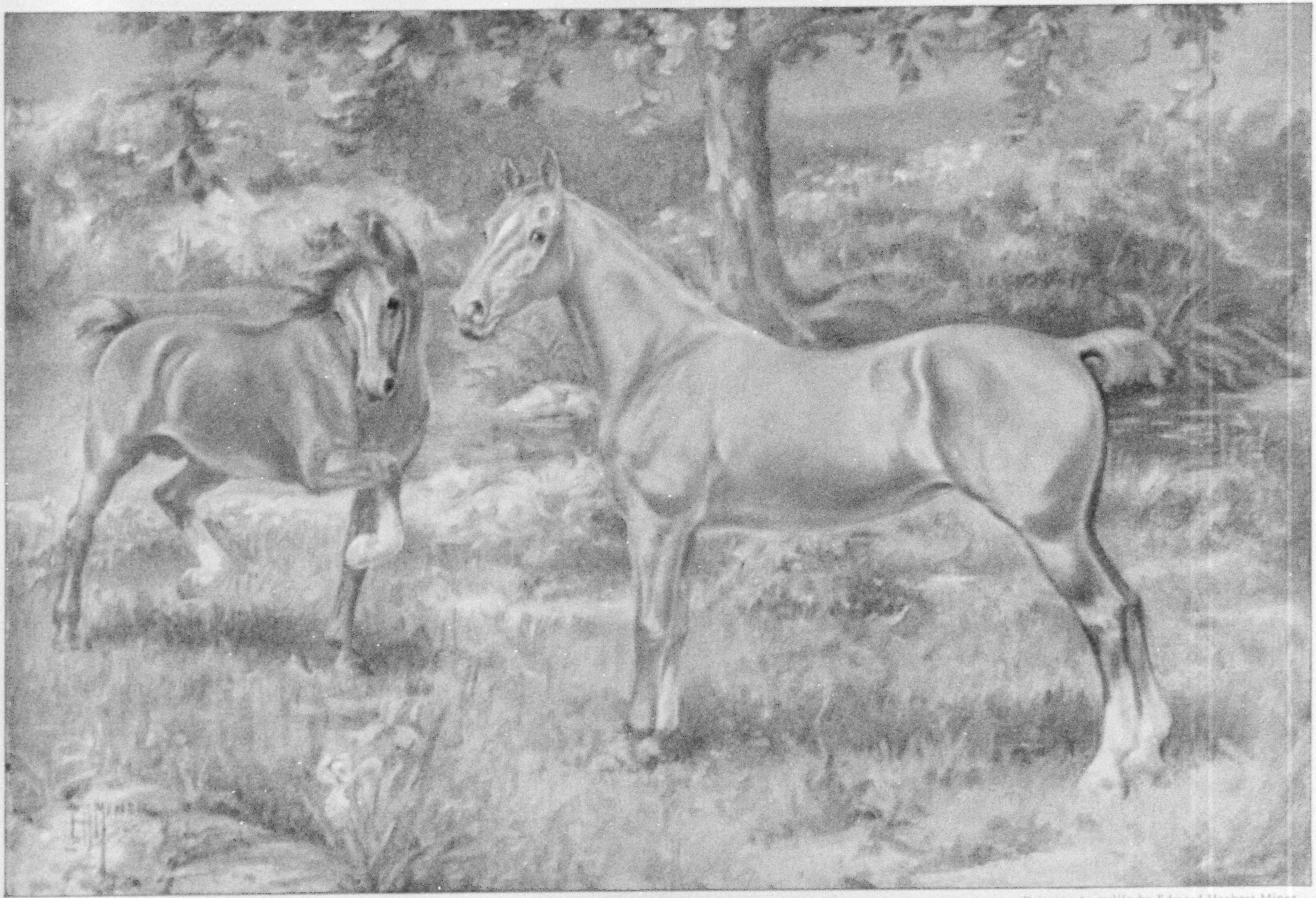
ARABIAN

XI



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HACKNEY

natural or artificial, and to-day either or both types of saddle horses are supplied to meet the demand.

The walk, trot, and canter are gaits natural and common to all breeds of horses. What are known as saddle gaits, while not easy to describe, have been familiar to horsemen as the rack or single foot, the running walk, and fox trot. These easy gaits have long been known in America and were undoubtedly known in England before the settlement of this continent took place.

A preference for such gaits in the South, a land of large plantations and long journeys, was evinced before the Thoroughbred had become a recognized and fixed type; but the finished, beautiful American Saddle Horse of to-day is a development due to a commingling of Thoroughbred blood with that of the best of the old pacing, racking, ambling, fox-trotting saddle horses in use by the planters and stock-raisers of certain regions of the South.

To the Southerner, who never rode with short stirrups and who regarded rising to the trot as a heathenish invention of the English, his riding animal was a saddle horse, which meant a gaited horse capable of taking him on long journeys, especially in the hot season, with a minimum of discomfort.

While the easy-gaited horse was long known, the development of the present upstanding, beautiful American Saddle Horse is quite modern and has been based upon ideals in conformation and quality as well as performance.

In the Thoroughbred and trotting horse families, beauty of conformation was pleasing, but speed and winning stamina fixed the goal toward which all breeding was directed.

The modern American Saddle Horse now traces quite definitely to a Thoroughbred sire which was mated to a pacer, the daughter of a pacer. This sire, Denmark, mated to a daughter of Cockspur, produced Gaine's Denmark, the greatest of saddle-horse sires; to him all registered saddle horses of to-day trace their lineage.

Denmark was a Thoroughbred, by imported Hedgeford, and was foaled in Fayette County, Kentucky, in 1839. While his races were characterized by stamina and unusual gameness, he never achieved any great fame as a race horse. His reputation as a sire is mainly based upon one of those fortunate and historic matings in which the great qualities of both sire and dam were reproduced in the colt. The Stevenson mare, the dam of Gaine's Denmark, was a natural ambler, and to her must be awarded the palm of credit for the wonderful gaits of her descendants, while to Denmark is due much of the quality and appearance of the sons and daughters of many subsequent generations. Certainly, Denmark is entitled to no credit for the gaits so easily attained by descendants of the ambling mare.

The writer has a dim memory of the great excitement created at Belle Meade, the great Tennessee nursery of Thoroughbreds, by the birth of a pacing foal; but, having never heard of another one since that colt was shown at the old fairgrounds at Nashville, during the last exhibition before the Civil War, he is unwilling to credit his lifelong belief, and accepts the well-known result of experience, that no Thoroughbred blood accounts for any gaits except the walk, trot, and gallop.

An analysis of the breeding of all the horses registered in the first volume of the American Saddle Horse Stud Book shows that of 1,083, only three were Thoroughbreds; 50 were half Thoroughbred, more than 800 a quarter or less, and a large number with uncertain or very little Thoroughbred infusion of blood.

There were many gaited stallions and mares reproducing their qualities long before any infusion of Thoroughbred blood entered the veins of the five-gaited horses, and the distribution of these easy-riding animals was general in the South.

The horsemen of J. E. B. Stuart, Forrest, Wheeler, Morgan, and other Southern cavalry generals were credited with ability to raid around the Union armies because of their Thoroughbred mounts. Confederate cavalrymen were required to furnish their own horses, but very few used Thoroughbreds, the vast majority being gaited saddlers and the balance hunters.

In the early days of hunting in England as well as in America, it was not unusual to ride ambling horses in following the hounds. Of course, when the half Thoroughbred hunters had established their preëminence for that particular sport, no one wanted any other type.

During nearly a quarter of a century in the cavalry service, the writer became somewhat acquainted with the merits of the walk, trot, gallop horse, and of the disadvantage of undertaking to regulate its gaits to conform to those of a fox-trotting or single-footing leader. Nevertheless, he admits his marked partiality for the five-gaited horse out of ranks, and would regard it as misfortune to the nation to have the single-foot and running walk eliminated from the schooling of our saddle horses.

Those who ride only to keep in training for the hunting field may be properly excused, but those who have been advised to pause in their business careers and take up horseback exercise may well begin by learning the art of riding a gaited saddle horse, and then begin to live all over again. If it does not make them better and more useful citizens, it will at least make them more contented with life and less critical of the small faults of their families.

It is a very old saying that "the outside of a horse is good for the inside of a man." The writer began his military career as a mounted messenger, or dispatch rider, with the army at 12 years of age, when he was furnished with a wonderfully trained saddle horse. It is certain he had no Thoroughbred blood, for he was a dark gray with a white face and white legs. It is a far cry back to 1864, but the memory of that mount still clings and makes many others seem poor by comparison.

As the years passed, I found it quite necessary, as a general, to be mounted upon a Thoroughbred charger and never had to apologize for "Phœnix Park." In order to get the full application of the adage quoted, I alternated

in riding by using "Phœnix Park" one day and "Quenton," a five-gaited Kentucky saddle horse, the next, and kept it up until retired for age.

If any man for whom horseback riding has been prescribed desires the full benefit of it, I recommend to him to ride alternately a gaited saddler and a walk, trot, gallop horse, and if there remains any part of his anatomy unexercised at the close of the week, he can swim on Sunday.

If every one who needs to ride a gaited saddle horse should enter the market at once, the demand might exceed the supply, but the report of the American Saddle Horse Breeders' Association shows that on January 1, 1921, there were registered 8,782 stallions and 14,826 mares. These are all pure breds, and it is safe to conclude that the half- and quarter-bred saddlers exceed the pure breds in number, and while some are better than others, they are all good.

## THE SUFFOLK

*(For illustration see Color Plate XIV)*

The Suffolk has long existed in England and is often referred to as the Suffolk Punch, a cart horse of many good qualities. A century ago the Suffolk was regarded as the most active, steady, and powerful draft horse in England.

From 15 to 16 hands in height, a rather coarse head and short neck; shoulders round, breast full, and body long, with well-rounded barrel, higher in the hind than the fore hand were the characteristics which mainly distinguished the Suffolk. The predominant color—in fact, the almost invariable color—of the Suffolk has always been chestnut.

As much as a century and a half ago the Suffolk attracted attention for his draft qualities, and many exhibitions of his strength were staged in his native county. These exhibitions not only involved hauling loads, but matches between individual horses and teams to pull against each other, in the manner of the tug of war between athletic teams.

Another and rather unusual method of reaching a determination of courage and strength was to hitch individual horses or teams to an immovable object, such as a tree, and award the palm of merit to the animals which made the greatest number of efforts by throwing themselves into the collar and pulling with all their strength at the word of command.

One of the most interesting among the older English writers on the horse tells of the sporting instinct which these contests aroused, and that on one occasion 1,500 guineas were wagered on the result, when 15 horses were attached to an equal number on the other side, in a tug of war, to see which could move or outpull the other.

Just when and where the Suffolk originated is not a matter of authentic record. It is well known, however, that for a long time before the Suffolk Punch was recognized in England as a separate breed, the French had bred a superior type of large animals, known as Norman horses, which were generally of chestnut color, with white legs and blazed faces. It is possible some of them had crossed the Channel and become segregated in Suffolk. On the other hand, the Suffolk Punch might have been created in England as a distinct breed through the medium of crosses similar to those that took place when the Norman was developed in France.

Every well-bred Suffolk horse of to-day is descended from a nameless stallion of the old breed, foaled in 1768 and owned by a Mr. Crisp, of Ufford, near Woodbridge. He was a bright-colored chestnut 15½ hands in height. About 1773 fresh blood was introduced through a trotting stallion, short-legged and of chestnut color, which blended thoroughly, with the result that, while not greatly altering the breed, there was an improvement in appearance and action.

In the early part of the 19th century another foreign stallion, also of chestnut color, was introduced, the new cross adding a little more size.

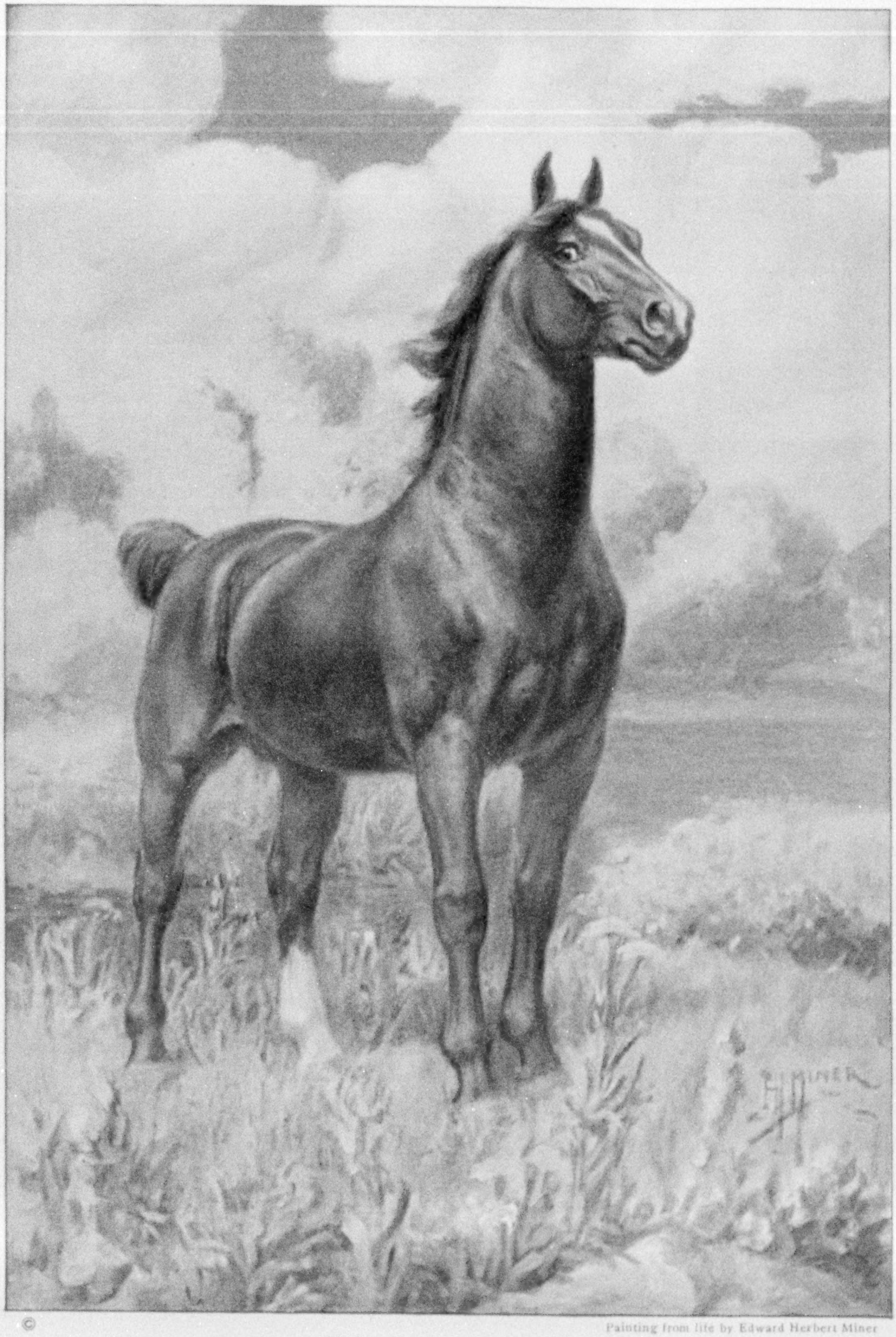
Suffolk breeders object to white stockings. One of the conditions of entry in the Suffolk Stud Book is that "no horse otherwise than a chestnut color shall be admitted, but white or silver hairs well blended with chestnut shall not be held to be ground of objection, provided the quantity does not amount to a decided roan."

In his investigations of color in horses, Professor Anderson, of the Kentucky Experiment Station, found that chestnut color is recessive to all other colors, and that a chestnut horse can produce only one kind of reproductive cells as to color. Consequently, when a chestnut mare is bred to a chestnut stallion the foal will always be chestnut in color, regardless of the ancestry. It was thus easy to fix the color in the Suffolk breed of horses. When breeding horses of other colors, it is not possible to predict with certainty what the resultant color will be.

The Suffolk is native to Suffolk County, in eastern England, and production of the breed is confined almost entirely to that and adjoining counties. The Suffolk is not bred in competition with other heavy breeds for work in cities, but ranks high among farmers in England, as capable of doing a large amount of work on less feed and for longer periods than any of the other heavy draft horses.

While occasionally a stallion may weigh 2,000 pounds, such weight is not characteristic of the breed. In general, the Suffolk is smaller than the Shire, Clydesdale, Percheron, and others of the heavy draft breeds. The Suffolk has a deep and wide body and the ribs have a pronounced spring, giving the body a round and full appearance. The croup is straight, the sloping croup being rarely found in this breed. The quarters are round and well muscled. The legs are short and free from the long hair or feather characteristic of the Shires.

The Suffolk is active, usually of a good disposition, and is rated as an easy keeper. The distinguishing characteristic of this breed is

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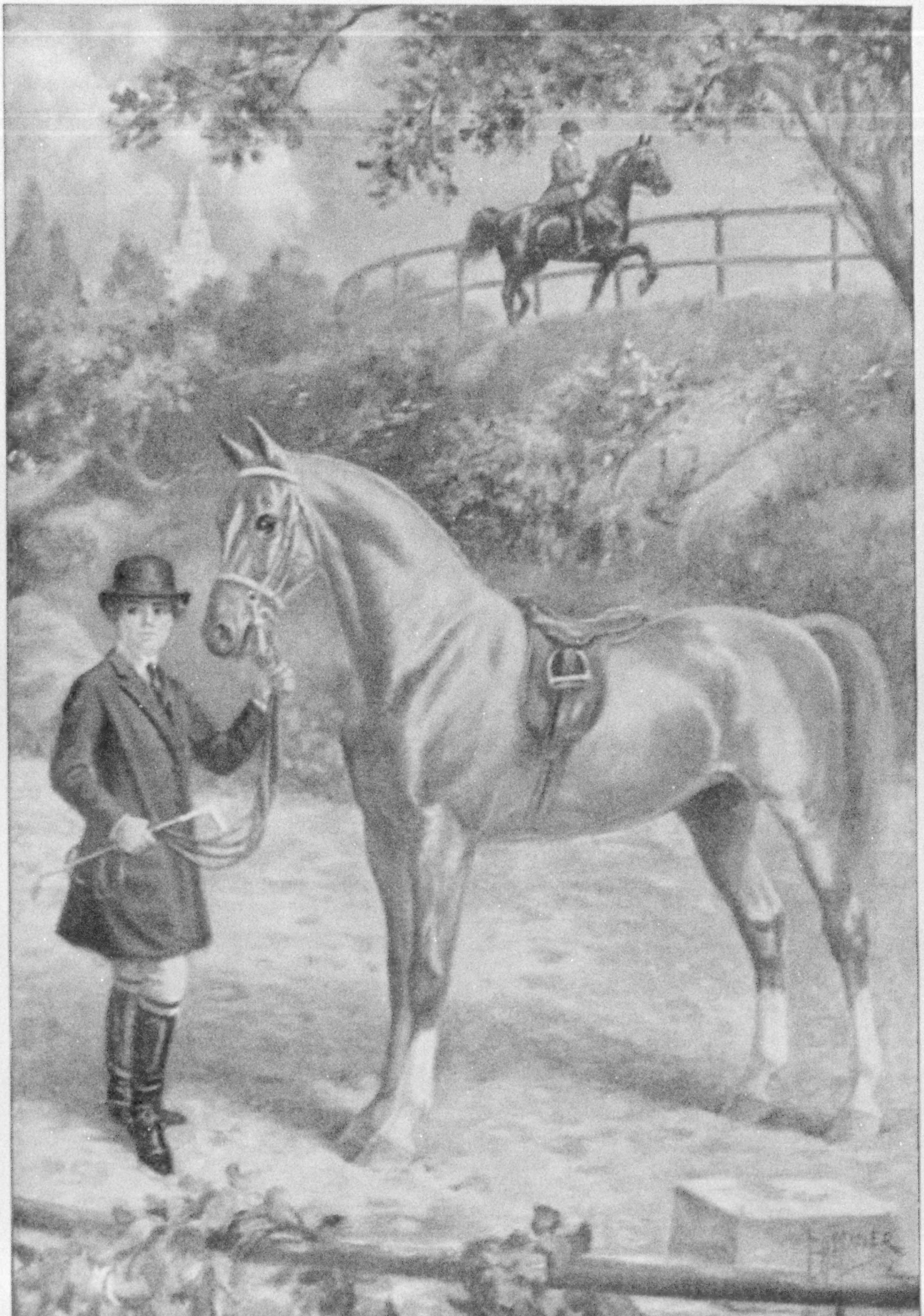
GERMAN COACH HORSE



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AMERICAN SADDLE HORSE

the invariable chestnut color, varying from light to dark.

Suffolks were first imported to America in the early eighties, and while continuing to come in small numbers, they have never gained a strong foothold here. They are not bred in large numbers in England and the home demand leaves only a small surplus for export. Their lack of size as compared with other draft breeds has deprived them of favor, but the American Suffolk Horse Association finds sufficient interest to maintain a Suffolk Horse Stud Book, which contains the registration of 1,356 animals to March 4, 1922.

There has been some crossing of Suffolk stallions on native mares in this country, but not of sufficient extent to create an appreciable number of half-breds or to enable a fair judgment of their value in comparison with other half-bred draft horses.

## THE CLYDESDALE

*(For illustration see Color Plate XV)*

The Clydesdale originated and has been developed in Scotland, and is practically the only draft horse found in that country. The early history of the breed is obscure, but it probably contains the blood of both the English draft horse and of the old heavy Flemish horse. For many years, however, the Clydesdale has been bred pure, and since 1878 has been registered with the Clydesdale Horse Society of Great Britain and Ireland.

The Clydesdale is not as heavy as either the Belgian or the Shire and, as a class, will not equal the Percheron in weight. The Clydesdale is more rangy and lacks the width and compactness of the other breeds mentioned.

The Scotch breeders have paid particular attention to legs, pasterns, and feet, but have placed less emphasis on weight than has been the case in other heavy breeds. Mature Clydesdale stallions in this country will probably weigh from 1,700 to 1,900 pounds, when in fair condition, and average about 16¼ hands in height. The mares will probably average from 1,600 to 1,800 pounds in weight and about 16 hands in height.

No other draft breed equals the Clydesdale in style and action. The prompt walk, a good snappy stride, and a sharp trot, with hocks well flexed and carried close together, are characteristic of this breed. Good, clean, flat bone; well-set, fairly long and sloping pasterns, and a moderate amount of fine feather or long hair at the rear of the legs below the knees and hocks are also characteristic features.

The colors most commonly met with are bay and brown, with white markings, but blacks, grays, chestnuts, and roans are occasionally seen. The white markings are characteristic, and it is the exception to see a bay or brown Clydesdale without a white face and considerable white about the fetlocks and legs.

Americans, as a rule, do not fancy a horse with a white face and legs, nor is the feather or long hair about the fetlocks popular, because of the difficulty in keeping the legs and feet free from mud and snow.

It is not always easy to differentiate between Clydesdales and Shires, but on the whole the breeds are quite distinct. The Clydesdale is not as heavy-bodied as the Shire and has more refinement. The feather is more silky and less abundant in the Clydesdale than in the Shire.

The American Clydesdale Association was organized in 1879, and up to January, 1922, a total of 21,000 animals had been registered. The distribution of the Clydesdale in this country is quite general in the North, but they are seldom seen in the South. They are mainly found in Iowa, Illinois, Wisconsin, Minnesota, and the Dakotas.

Clydesdale geldings are popular for use in cities, where draft horses with style, quick action, and a good, long stride are desired. Many excellent half-breds have been produced by mating Clydesdale stallions with selected native mares. While lacking the weight necessary for the heaviest work, they are just right for medium-draft work at the walk and trot.

In numbers among the pure-breds in America, the Clydesdales rank fourth on the list, but on January 1, 1920, there were only 4,248, as compared to 70,613 Percherons and 10,838 Belgians. This shows a decided preference for the Percherons, but it should be remembered that the number of Clydesdales available for sale in Scotland is very small compared to the number of Percherons in France. The breeding of Percherons has been going on in America very consistently and for a considerable period, so that there is no longer dependence upon France for breeding stock.

## THE BELGIAN

*(For illustration see Color Plate XVI)*

The Belgian draft horse originated and has been developed in Belgium, and is the only breed of horses which is bred to any extent in that country.

There were originally three types of draft horses in Belgium: the Flemish, the largest, produced nearest the coast; the Brabançon, an intermediate type, bred farther inland, and the Ardennaise, a small, rapid draft horse, similar to the French horse of that name, bred in the border districts. There has been more or less amalgamation of these three originally distinct types in the evolution of the existing Belgian draft horse.

Belgium is a part of the original territory to which the old Flemish horse was indigenous, and it is clear that the Flemish stock was the foundation of the modern Belgian.

The Belgian divides honors with the Shire as being the heaviest of any of the draft breeds. Stallions weighing a ton or more are comparatively common. In height, mature stallions average over 16¼ hands, and mature mares above 16 hands. In conformation, they are the most compact of any breed, the bodies being short, wide, and deep. The head is of medium size, the neck is short and heavily crested or arched; the chest is broad and deep; the back is short and well muscled over the loins; the croup is somewhat drooping or steep, and the quarters are full and heavily muscled. The legs

are short and free from the long hair or feather characteristic of the Clydesdale and Shire.

The Belgian is less active than the Clydesdale or Percheron, but in temperament is docile and easily handled. He is a good feeder and is easily kept in condition.

The Belgian, according to numbers in America, ranks second in favor to the Percheron, but there are certain deficiencies which will probably prevent his ever becoming a serious rival of the latter, which outnumbers him seven to one.

Many Belgians have short and heavy necks, drooping croup, a roughness about the hocks, and short and straight pasterns. Notwithstanding this lack of quality, the Belgian has made much progress in America during the past 20 years, and where selected Belgian stallions have been mated with rangy American mares, the results have been very satisfactory.

The Belgian Draft Horse Society was not organized until 1886. At the annual horse show, 1914, held by the society, the number of entries exceeded 1,000, probably the largest number of a single breed entered at any show in the world. At the annual show held in 1919, the number of entries exceeded 800, notwithstanding the devastation of four years of war.

The Belgian Government's interest is manifested by annual awards of prizes and subsidies to the best animals in the various provinces. Stallions which stand for public service must be approved by a commission appointed by the government.

The American Association of Importers and Breeders of Belgian Draft Horses was organized in 1887, and up to March 1, 1921, a total of 12,708 stallions and 9,203 mares had been registered. While the old Flemish horse undoubtedly had an influence in England, and perhaps in France, in the long ago, it is not easy to trace definitely. Just what the effect will be in America can hardly be predicated upon the history of any draft breeds as yet developed.

Whether the numerous draft breeds now maintaining separate registration in America will continue indefinitely is a matter of conjecture. If a composite draft horse shall arise in America within a century or two, the old stud books, if properly preserved, should throw more light upon its history than exists now of any of the present well-defined and separate breeds. Any of the existing types, taken in connection with mules, should fill all the needs of America, but, as with cattle, each breeder sets store by his favorite breed and has his following.

## THE SHIRE

*(For illustration see Color Plate XVII)*

Whatever mixture of blood may have found its way into the Shire horse, as known to-day, its origin and development pertain strictly to England. The Shire horse-breeders of England organized in 1878 as the English Cart Horse Society, but a few years later the name was changed to the Shire Horse Society, and to the world this fine, useful great horse is now known as the Shire.

The history of this animal has long aroused the interest of British writers, and, as usual, whenever the history of any type of horse runs back beyond a century or two, lack of established and veracious records leaves wide open the doors of speculation.

In this case, however, it is not necessary to draw heavily upon the imagination to connect the modern Shire with the Great Horse of England, which was developed during the period when the heavily armored knights rode forth to battle for king and country and betimes to enforce their views of religion upon unbelievers in general and Mohammedans in particular.

The general use of saddle horses in England, according to the best authorities, did not obtain until about the seventh century, although horses were employed by the natives of that country before the Christian Era. The battle chariots, used to convey quickly to strategic points the men who fought on foot, were encountered by Roman legions under Cæsar when he invaded England, in the year 55 B. C.

The absence of good roads and the crudeness of the heavy chariots make it certain that the war horses of the English were possessed of both size and stamina as well as activity.

While the art of fighting as cavalry was of very slow development in England, horses were used to convey picked troops of heavy build, encased in armor, from place to place, as well as in battle, and this demanded a powerful horse.

The use of some kind of armor was universal for 500 or 600 years before gunpowder for military purposes was adopted by fighting nations.

Mail or chain armor was in use during the Crusades and continued until displaced by the heavier plate armor, which demanded a large, heavy horse.

Out of these needs of the mounted services came the development of horses in several countries, which found later their high destiny in civil work, when commerce and agriculture, followed by industrialism, came to occupy the attention of nations between ever-recurring wars.

It is well established that when laws were enacted regulating the breeding of large horses in England, importations of stallions of the heavy class were made from the Continent for the royal stud. These importations took place a century before coaches were introduced in England, but it seems reasonable to conclude that the heavy horses were used for many draft purposes as well as for the saddle, and that upon the abandonment of armor, lighter horses came into use for riding, and the heavy animals were then relegated to their more natural and proper employment, in the cart, the plow, and for hauling heavy ship and other timbers.

The Shire, as known to-day, is a much larger horse than his forebear, used by the mounted warriors of old. The Shire is a massive horse, with a wide, deep, and long body, and is equaled in weight only by the Belgian. A Shire stallion in fair condition should weigh 2,000 pounds or more and the mares should average about 1,800 pounds. The Shire stallions average about 17 hands in height, many going above that, while the mares usually exceed 16 hands. The Shire

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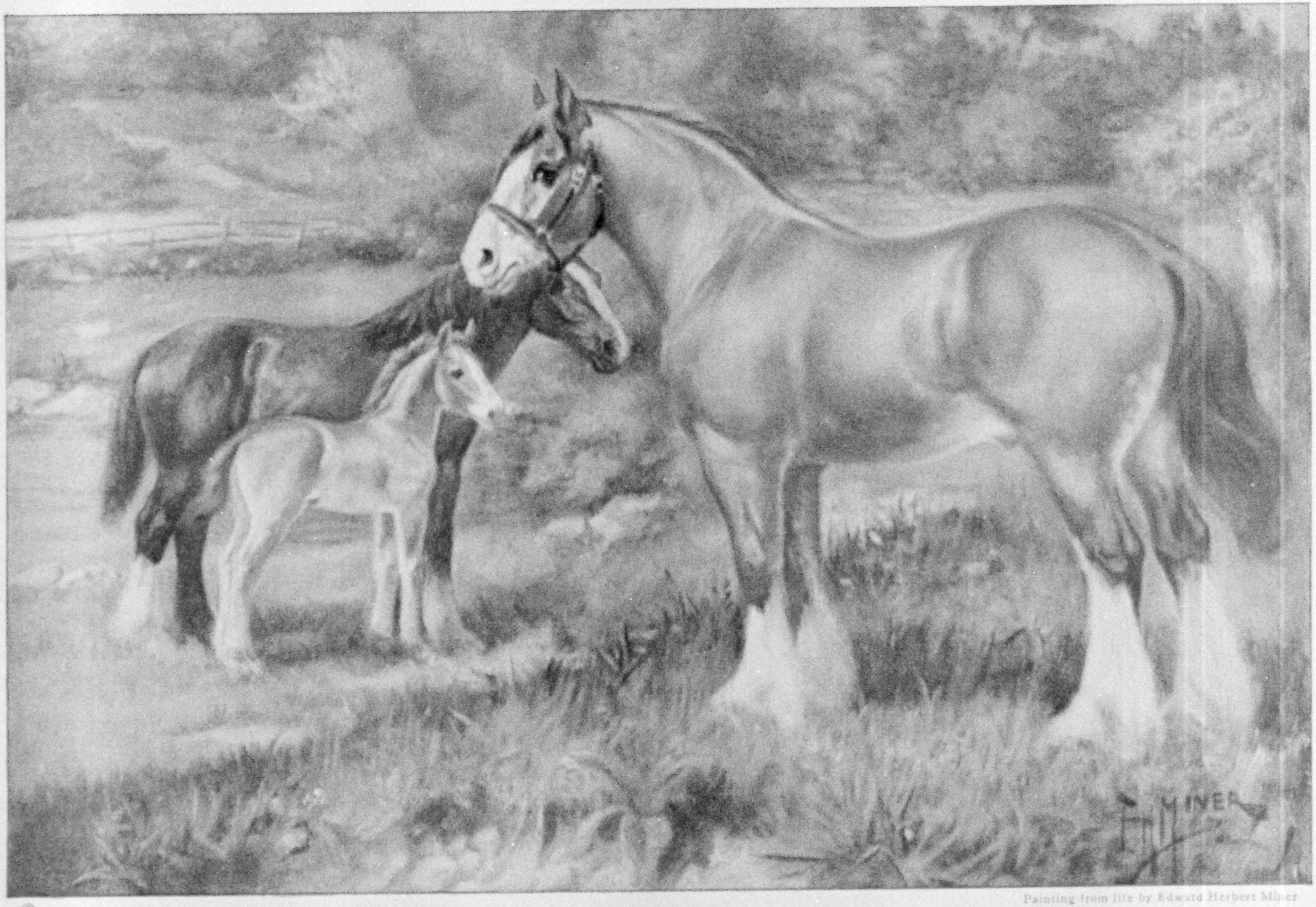
SUFFOLK

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CLYDESDALE

is a big, rangy horse, and on the average is taller than any other breed. It is characterized by heavy bone, heavily feathered legs, sluggish temperament, and prevalence of white stockings.

The Shire lacks the alertness and general refinement of the Percheron, deficiencies which have made it less popular in America than the French horse. The breed, however, has met with much favor in the Central West, for the Shire is a truly great horse, of tremendous power.

Unquestionably, the existence of large quantities of feather or hair about the fetlocks has cost the Shire deserved favor, but this does not count so heavily against him in city work. Here, however, the Shire and all other heavy draft horses have encountered serious competition in the rapid development of motor trucks.

Just what will happen when gasoline mounts to prohibitive cost remains for the future to disclose, but it would be an international misfortune should conditions result in making the breeding of the splendid Shire horse unprofitable.

In popularity in America, the Shire ranks third among the draft breeds on farms, according to the last census of pure-bred animals, but in numbers comprises only 5,617 as compared to 10,838 Belgian and 70,613 Percherons.

The American Shire Horse Association has recorded over 19,380 animals since its organization, in 1885. The Shire horses are seldom used in the Southern States, but have met with favor in California, Oregon, and Washington.

Power and not speed is desired in the draft horse, for the hauling of heavy loads is done at a walk. These conditions demand a compact, short-legged horse, of sufficient weight to enable him to move the load by throwing himself in the collar. With great height there must go proportionate development of size, weight, and strength, and these points are all characteristic of the Shire.

While automobile trucks have been undergoing improvement in many ways in recent years, there is yet a possibility that in some fields the Shire and other heavy draft horses may prove more economical. A Shire colt may begin work, adjusted to his strength, at two or three years of age on the breeding farm, and be sold at four or five for heavier hauling. With care and proper feeding, he should give good service until 15 to 18 years of age or longer. The original investment in a motor truck will be six times greater than the cost of a Shire and the truck will go on the junk pile about the time the horse is reaching his greatest period of usefulness.

## THE PERCHERON

*(For illustration see Color Plate XVIII)*

The Percheron horse is the product of several centuries of careful breeding in a district of France about one-fifteenth the size of the State of Iowa. In the days when France was still much in forest, horses were being raised in the Perche district, and infusions of blood there resulted, as in all other regions, from home-coming warriors bringing horses taken from the enemy.

When Charles Martel defeated the Saracens at Tours and Poitiers, 732 A. D., vast numbers of horses were taken and distributed throughout France, and doubtless they exercised considerable influence on the horses of all the breeding districts.

The Crusaders, also, were credited, several hundred years later, with bringing home choice horses, but they could not have been of the class needed to build up the now famous horses of the Perche. In fact, the demands of the Crusaders and of the knights in general were for a horse of martial bearing, capable of carrying a man in armor. The total weight of knight and armor was very great, although many specimens of armor used by Crusaders and others, still preserved in Europe, indicate that the knights, who were always made to appear very large in old paintings and prints, were inferior in size to modern athletic, well set up soldiers.

Without entering into the many speculations as to the origin of the Percheron, it is well established that the district supplied for a long time the heavy post horses, capable of pulling the old-style stage or diligence at a smart gait, and a slightly lighter class of horses for use of the army, and that the gradual change to production of the heavy draft horse began about a century ago.

Following close upon the development of the Percheron as a heavy draft horse in France, importations to America began. During the Civil War there were many half-breds in Ohio, and they were much sought after for army use.

The introduction of the heavy horses was very gradual, and it was not until after the Civil War that any were found west of Ohio, but by 1870 the center of interest in the Percheron was in Illinois. The results of the Percheron cross on native mares was very marked. That the popularity of the breed exceeded that of all other heavy horses combined is attested by the census of pure-breds now in America, from which splendid types of the large horse are being regularly added to the list.

As stated elsewhere, the number of imported Percherons in America now exceeds the total of all other imported heavy draft horses combined and the importations of the best to be had in France continue.

The Percheron is not so large a horse as either the Belgian or the Shire, but as a general rule is heavier than the Clydesdale. Some of the stallions attain a height of 17 hands, but a preference exists for the short-legged, compact form. It is not uncommon for the modern Percheron colt to weigh a ton at three and sometimes even at two years of age.

The prevailing and preferred colors of the Percheron are black and gray, although bays, browns, chestnuts, and roans are sometimes seen. About 90 per cent, however, are either black or gray. Grade Percherons of these colors, when of the right conformation, are always in demand and easily marketed.

The discrimination of buyers has done much to educate the farmers as to the type of mare to be mated with the Percheron. In the early years of Percheron development many mistakes were made. The writer was at that time buying horses for the Army and took occasion to comment officially upon the large number of young, rangy, iron-gray, half-bred Percherons, with tails set low, undersized bodies, long legs, and big feet. They were clumsy in harness and unsuitable for cavalry service.

Fair criticism and unsalability soon corrected the matter. It only required the use of better judgment in selecting mares. The popularity of the Percheron grades is readily comprehended when it is considered that the last volume of the Percheron Society of America's Stud Book, issued in 1921, shows that 160,000 pure-bred animals had been accepted for registration up to that time.

More refinement is observed about the head and neck of the Percheron than in any of the other draft breeds. The head is clean cut and of medium size, and the neck rather short and well crested. The chest is deep and broad, the back is short, the loins smooth and well muscled. The croup is wide and in some cases sloping, which latter is not a desirable quality. The legs and feet are generally good and clean, without the hair or feather characteristic of the Clydesdale and Shire.

In action the Percheron is good at both the walk and trot. His action at the trot is characterized by a snap not displayed by any other draft breed. Without doubt, this is one of the qualities which accounts for his popularity, but the absence of the hairy legs is a popular factor in the corn country, where the break-up of winter is usually followed by long periods of melting snow and slush.

The tribulations of the farmer since the World War have been great, but are not to be compared to the distress of the breeders for years following the panic of 1893, when many aggregations of pure-bred horses were dispersed at a mere fraction of their cost. But the Percheron has come to stay and for the past 20 years he has made his way into hearts and stables all over the West.

When the World War demand for horses sent the army buyers scurrying to America, they were more than delighted to find, at reasonable prices, large numbers of high-grade Percherons that met in every way their requirements as transport and artillery horses. A team of well-matched Percherons will attract admiration in any assemblage of the world's best horses.

## THE THOROUGHBRED

(*For illustration see Color Plate XIX*)

Thoroughbred is the name applied to the breed of running horses used for racing on the turf or track. In England races are run over straight courses, usually on turf, while in America tracks are nearly all elliptical in shape, the surface being cleared of all turf and stones and made as smooth as possible, to enable horses to put forth their best efforts. The difference between straight and elliptical courses must be considered in comparing time made on the two tracks.

There is a marked distinction between pure-bred and Thoroughbred. The first may refer to any horse qualified for registration in the stud book of his type; the second relates only to the breed of running horses which have descended in direct line from a particular group admitted to registration as Thoroughbreds when it became assured that a fixed type had been created.

Trials of speed had taken place between horses from the earliest recorded history, but the foundation of the Thoroughbred stock traces back only to the reign of Charles II, when a number of Barb mares were imported into England for the royal stables during the period from 1660 to 1685.

It was on this and other selected stock that dependence was had when the Byerly Turk, imported in 1689; the Darley Arabian, imported in 1706, and the Godolphin Barb, imported in 1724, were established at the head of the racing studs of England and laid the foundation of the Thoroughbred.

The early race horses resembled their sires in size, few of them exceeding 14½ hands in height. The three sires named were all less than 14½ hands, but gradually larger horses were produced and greater speed resulted.

It has been estimated that race horses increased in height an average of one inch each 25 years from 1700 to 1850.

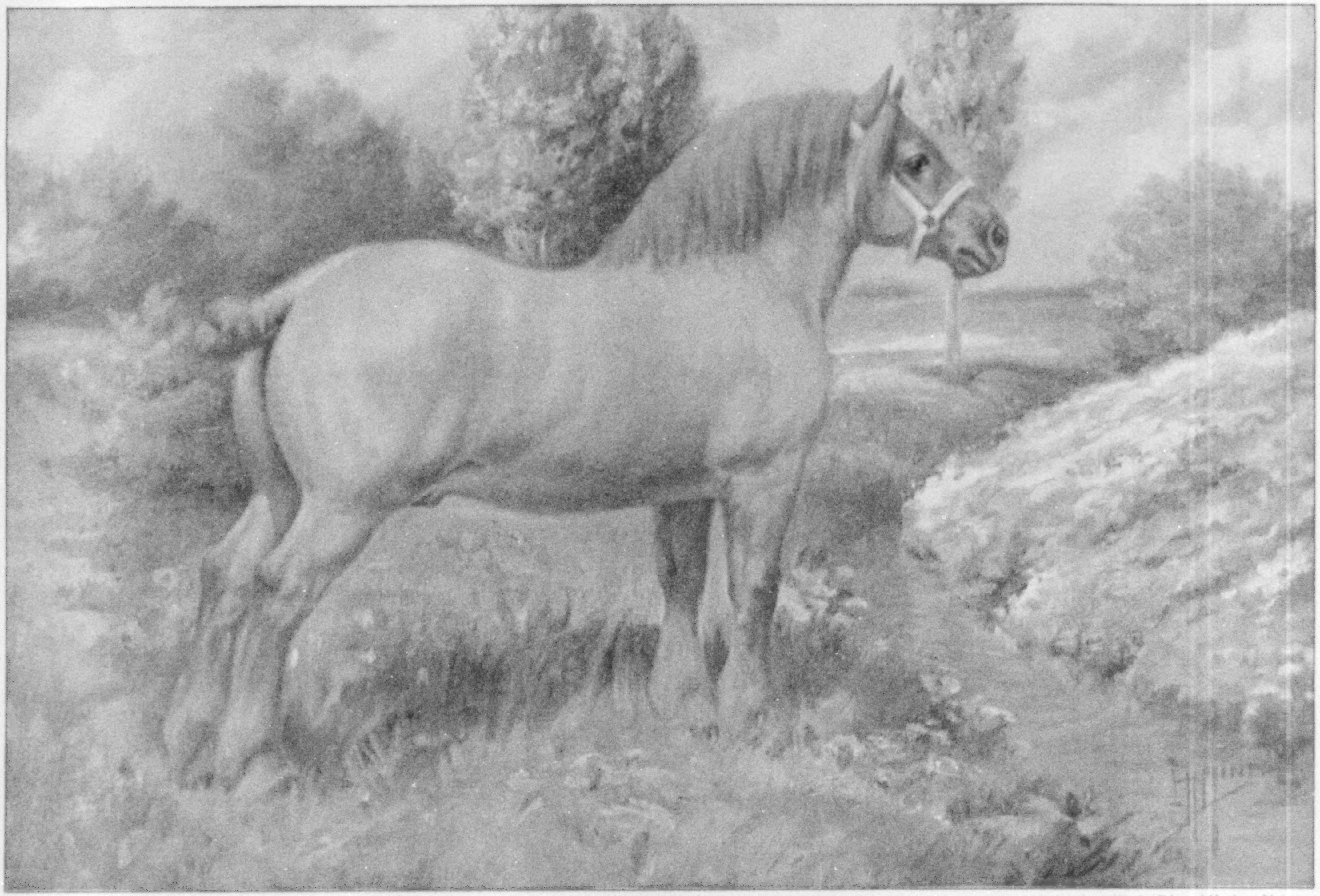
Along with increased height went size and stamina, for very early in the racing calendar races of six miles were not uncommon and four miles was the usual distance, frequently run in heats, with weights prescribed by law at from ten to twelve stone, in accordance with age, the stone being rated at 14 pounds.

About a hundred years ago the introduction of shorter races and lighter weights began, and this change gradually affected the breeding, which tended toward the creation of an animal qualified to win at short distances, without regard to the strength and stamina demanded for long distance and heat races. Rarely is a horse now called upon to run more than a single heat of one and a half miles.

Coming down the years, from the earliest recorded history, the horse is encountered in song and story; yet when we come to appraise, at their relative value, the Persian, the Assyrian, the Macedonian, the Libyan, the Egyptian, the Arabian, the Barb, and other ancient breeds, we find ourselves embarked upon a sea of romance.

There seems to be absolutely no recorded history of any particular line of descent of horses that antedates the Thoroughbred, which has been maintained through the past two centuries. The most aristocratic of the Arabians have been kept unsullied in purity, but individual lineage has not been preserved, nor is it deemed necessary by the Arab tribes.

In the breeding of Thoroughbreds the most rigid selection is practiced, racing performance being the only standard. Thoroughbred stallions are used, however, to cross on selected



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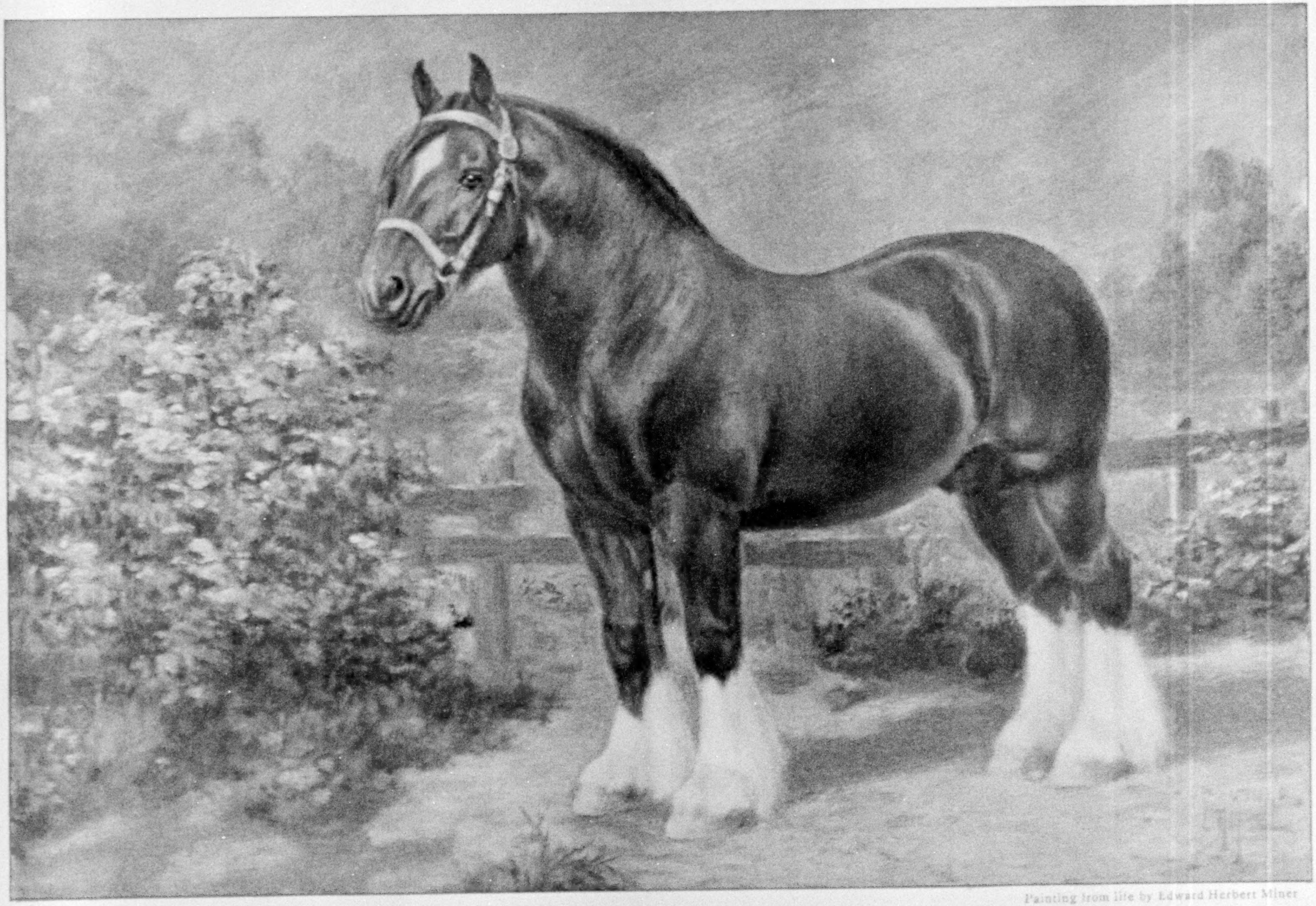
BELGIAN



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SHIRE

mares to produce hunters, remounts for cavalry, and polo ponies. After 200 years of experience, breeders have observed no decadence in the blood, and there is no suggestion of possible improvement of the Thoroughbred by any further cross.

The pure Arabian is admitted to Thoroughbred registry; but while his prepotency in the beginning was highly important in fixing the Thoroughbred type, experiments in crossing on Thoroughbred mares in recent years have not resulted favorably, so far as improvement of racing qualities is concerned.

The Thoroughbred is the oldest of the improved breeds of horses known to the world to-day, and was the first to be registered in a stud book of its own.

The breed is characterized by extreme refinement of form and appearance, the colorings following quite uniformly without any of the tendency to lines, stripes, or piebald spots which characterize the horse in his feral state.

The intensive study incident to mating of Thoroughbreds to obtain speed has led to consideration of speed records with regard to sex and color. Taking a famous Thoroughbred stallion, St. Simon, as an example, it was observed that his grandsons and granddaughters of chestnut color were inferior in speed records to their bay and brown brothers and sisters. It was further shown that the brown fillies were of superior racing ability to the brown colts, as well as to the bay colts and fillies.

Of course, if any such conditions were of general application, it would be necessary to call in the services of the handicapper, or the owners of the brown fillies would make the racing of all others unprofitable.

There is no royal road to success in racing except to follow the lines of breeding in which the great race horses have been produced. Even then the door of disappointment is always ajar, though the greatest chances of success lie in following the rule that like produces like.

Some years ago a colt was produced in Tennessee, and under the name of Luke Blackburn became famous from his first appearance on the track. At the next annual sale of yearlings a full brother to Luke Blackburn was among those offered. When the bidding had reached the then unheard-of price of $7,000, the master of Belle Meade arose and asked to be allowed to withdraw the colt, because no untried yearling was worth that much, and disappointment in event of any failure would react on the breeding industry. The bidder insisted on his rights and got the colt, which never won a race.

Values have changed in recent years, and in 1921, at the annual sale at Saratoga, $21,000 was paid for a bay colt by Sweep-Ballet Girl. The colt is a full brother to The Porter and other race horses of acknowledged merit. The colt was not run as a two-year-old, but if he develops the speed which his breeding indicates, he should be a strong candidate in his three-year-old form.

The highest price for a yearling at the last sale, in 1922, was $19,000, paid for a chestnut colt by Trap Rock, sire of many winners, whose brother, Tracery, an American horse, winner of the St. Leger in England, was sold for $265,000, the highest price ever paid for any horse.

In 1920 a highborn colt was sold for $72,500, which is the highest ever paid for a yearling. Prince Palatine brought the highest price ever paid for an English horse, $209,000.

The superhorse of his generation is Man-of-War. The story of his purchase is of interest. When Man-of-War was a yearling at the nursery farm of Mr. August Belmont, in Kentucky, the lot of yearlings was offered to Mr. Riddle, who sent his trainers to look them over.

They learned that one yearling had been set aside for Mr. Belmont. It was also learned that a full sister of the yearling, the first foal of his dam, Mahubah, had been tried out by Mr. Belmont's trainer, and made such fast time it was believed to be a mistake. Another trial was had and the proof of speed was accepted.

This impressed Mr. Riddle, so that when he found Man-of-War among the yearlings at Saratoga for the annual sale, he examined him and determined upon adding him to his stable.

From the first, Man-of-War showed great promise and his consistent development of speed continued until in his three-year-old form he became the most famous horse in the country and justified his reputation in every race in which entered. He was never required fully to extend himself. He not only had speed, but was considered able to go any racing distance.

His remarkable freedom from sickness and injury continued until his retirement to the stud, where he should fulfill his destiny as one in whose veins flows the best race horse blood of the world. Man-of-War's winnings while racing amounted to $249,465.

In the early years of racing it was the custom to use blankets in training and to sweat horses unmercifully to remove the fat. When it was shown that a horse could be trained in flesh, without all the weakening incident to heavy sweating, it was abandoned.

The next material change in racing came with the adoption of the present jockey seat, in which the rider is crouched in short stirrups over the horse's withers. Instantaneous photography seems to show that the motion of the horse is less interfered with by the rider in the new seat than in the old, and that slightly better time can thus be made.

## THE HUNTER

The Hunter is not a distinct breed of horse, but it is generally accepted, at the present time, that the type of animal required to carry weight across country, to negotiate satisfactorily the fences, ditches, streams, and other obstacles encountered, and to keep up with the hounds, can only be derived from mating animals of high quality with much infusion of Thoroughbred blood.

Hunting is one of the oldest diversions of

mankind, and the term covers the chase in all its forms, although seldom used now except in relation to fox hunting.

The ancients hunted the boar, the wild ass, the wild horse, the deer, the antelope, and all the game animals which formerly ranged the regions now occupied by man, who in his civilization decreed extinction to everything which did not lend itself readily to his change of habits from that of nomadic hunter to one of settled abode incident to the pursuit of agriculture.

While the ancients gave first consideration to horses for use in war, they also had definite ideas of the qualities required in the arena and the hunting field. As far back as the second century after Christ, one of the old writers, in a treatise on hunting, said that while each country had its own breed, he regarded as the most worthy at that period the Etruscan, Sicilian, Cretan, Mazicean, Achaean, Cappadocian, Mauritanian, Scythian, Magnesian, Epeian, Ionian, Armenian, Libyan, Thracian, and Eremian. At this time it is difficult even to locate, geographically, some of the breeds named, but the Libyan seems at that distant period to have been already recognized as of high quality, and it is to the horses of northern Africa that we pay homage as the progenitors of much that is best in all our modern breeds of horses.

While England has long maintained the honor of leadership in the hunting field, the breeding of hunters seems to have been an ancient occupation in Ireland, which country continues now to be the source of supply of the highest grade of hunters known to the world.

From a very early period Ireland obtained horses from the Mediterranean and continental traders, many of them of undoubted Libyan descent. There was already a good foundation stock of mares when the Byerly Turk arrived in Ireland in the latter part of the seventeenth century, and they responded perfectly to the new infusion of blood by the creation of a splendid type of race horses.

The mating of Irish Thoroughbreds with the Irish cart mares determined the character and quality of the hunter, which has been a national asset for two centuries, the supply never being equal to the demand.

The Irish hunters of highest quality are produced on grass lands with underlying limestone. The best of Thoroughbreds and Hunters in America are bred on similar lands, and the nearer they approach in big and strong bone to the Irish horses, the more highly prized they are.

Hunters are classified according to the weight they are expected to carry, varying from light weight, capable of carrying riders of from 135 to 165 pounds; middle weight, from 165 to 190 pounds, and heavy weight, up to 190 pounds and over. They are also classified as green or qualified, the latter only after having been hunted one season with a pack recognized by the United Hunts and Steeplechase Association.

To be a satisfactory hunter, a horse must be a consistent jumper of obstacles, up to five feet, encountered in cross-country runs. A horse may be capable of winning a high-jumping contest and still be far from safe across country.

Those who ride for exercise, especially those who would reduce in weight, are always on the lookout for high-grade hunters, even though they may never follow the hounds. There are comparatively few packs of hounds in America, but an ever-increasing number of both men and women who have come to appreciate the pleasures and health-giving qualities of horseback riding.

It adds immensely to the pleasure of horseback riding if one is mounted upon a trained hunter equal to negotiating an occasional ditch, stream, or fallen tree, such as are encountered whenever one leaves the beaten tracks.

If there is anything which gives greater contentment than possession of hunters able to go the pace and take the jumps as they come, the writer has never heard of it.

## THE STANDARD BRED HORSE

*(For illustration see Color Plate XX)*

The Standard Bred is an American breed, frequently referred to as the American Trotting Horse. As both trotting and pacing horses are registered in the same stud book, Standard Bred seems the preferable designation. The twenty-one volumes of the stud book which have been issued to date contain the registration of 65,000 stallions and 200,000 mares.

Messenger, an imported Thoroughbred stallion, and imported Bellfounder, a Norfolk trotter, registered in the English Hackney Stud Book, are credited as largely responsible for the foundation of this breed. Rysdyk's Hambletonian, a stallion to which a majority of Standard Breds trace, carried the blood of both. Some families of Standard Breds have produced a large proportion of pacers, while many individuals have shown speed at both the trot and pace.

After the American Trotting Horse appeared to have established his right to a stud book because of the consistent performance of horses bred in trotting lines, there was a tremendous controversy as to the descent of both stallions and mares involved in the creation of the foundation stock. Messenger was a gray stallion, known not unfavorably on the English turf, but with no great races to his credit. He was imported to America in 1788 for the purpose of breeding runners, and some of his get were good race horses, one of his running grandsons being American Eclipse.

There were no tracks devoted to trotting races until many years after the coming of Messenger to America. When interest was first manifested in trotting horses, they were sent over the courses under the saddle.

It was about 25 years after the arrival of Messenger before trotting races began to attract serious attention, and then distance was of as much consequence as time.

Both running and trotting races in all the earlier years were real trials of strength and stamina, for they were for long distances and frequently were heat races, the best two in three or three in five, each heat being of two, three, and sometimes four miles. It demanded bottom and courage to go through such contests.

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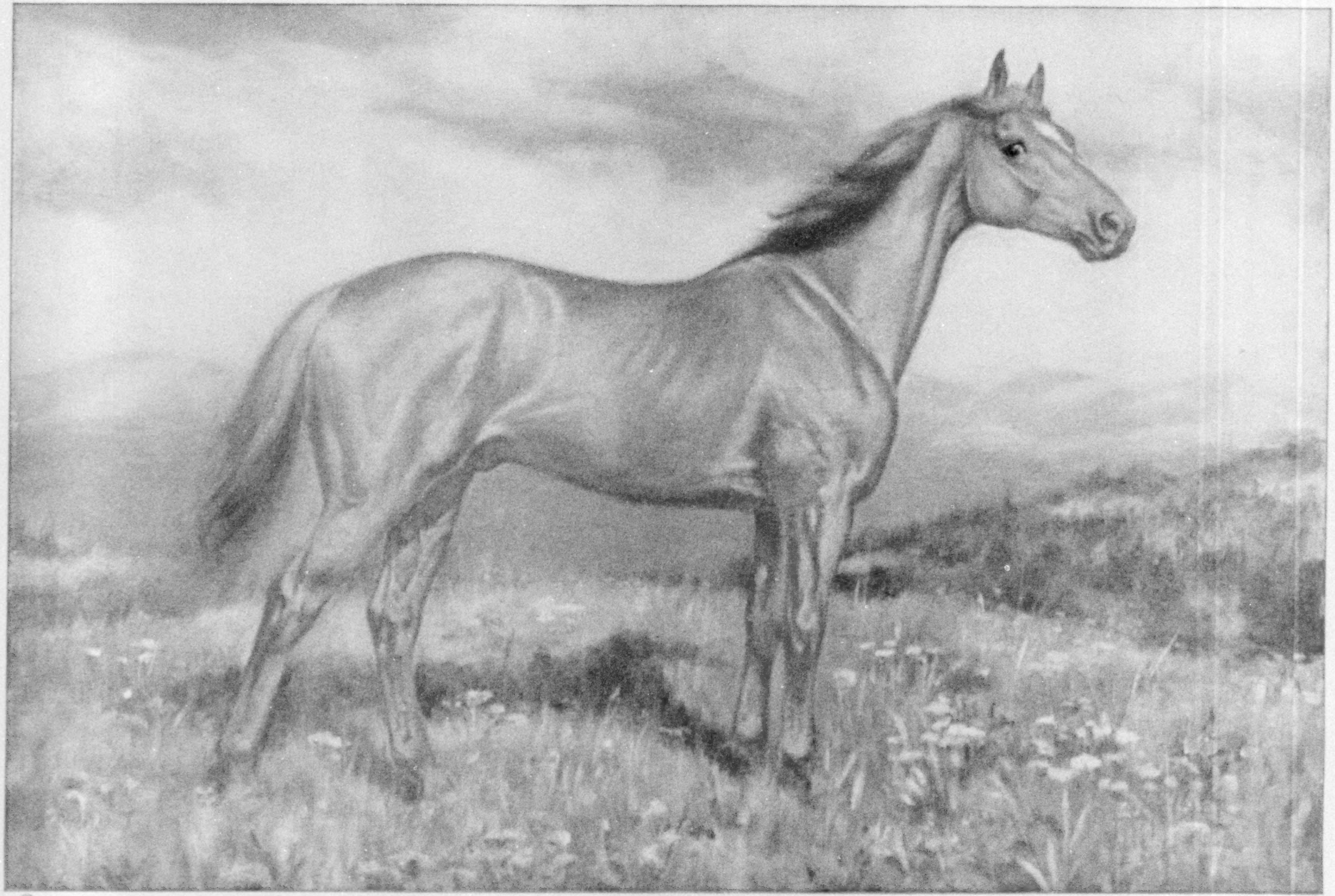
PERCHERON



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THOROUGHBRED: MAN-OF-WAR

For half a century the evolution of the trotting family went on, and a commingling of blood from many sources gradually crystallized into one line capable of breeding true to type and enabling the patrons and admirers to agree upon a system of registration and the adoption of a stud book.

It was a long time before the old slogan of "2.30 on the shell road" ceased to be a dream, and the time was gradually lowered until Flora Temple trotted a mile in 1859 in 2.19¾. This remained the record until after the Civil War, when a resumption of interest in racing brought together Ethan Allen and running mate, hitched double to a wagon, against Dexter in a sulky, at the Fashion Course on Long Island, in 1867. The writer saw Dexter on that occasion lower the trotting record to 2.17¼. Over the same course, six years previously, July 25, 1861, Flora Temple had beaten Ethan Allen and running mate, distancing the team in the second heat. The time was 2.21¼ for the first heat and 2.20½ for the second.

Dexter held the record for four years, when the results of breeding along trotting lines became more apparent in the rapid lowering of the mile record by some of the superhorses of their day—Goldsmith Maid, Maud S., Nancy Hanks, and finally Lou Dillon, whose record of a mile in 1.58½, in 1903, amazed the world.

While breeding had been directed along lines to produce great speed on the track, the characteristics of the new horse were gradually fixed so as to produce a useful horse, since only a few could be counted upon as record-breakers. For the large number which did not inherit speed enough for the track, a market was found among admirers of the light buggy horse. Half-breds showing some quality and style were always in demand as roadsters and for light wagon and farm work.

The type of Standard Bred fixed upon by breeders contemplates a horse from 15 to 16 hands in height, weighing from 1,000 to 1,200 pounds when in driving condition. Horses of this breed are heavier in proportion to their height than the Thoroughbreds and do not show such high quality of blood lines, the ears, head, and bone particularly being of coarser type.

The trotters attain speed through ability to extend themselves into long strides, repeated rapidly. They are enabled to accomplish this by reason of the greater proportionate length of forearm and lower thigh which they possess. Their muscles are long, narrow, and bandlike, with capacity for rapid contraction in an extreme degree. The running horse attains his speed by an entirely different manner of propulsion.

In creating and fixing the type known as the Thoroughbred, there was never any experimentation involving any gait except the run or extended gallop. It is astonishing how blood of running, trotting, and pacing horses is mingled in the Standard Bred.

In developing for speed as the primary qualification, there has been some sacrifice of conformation, if the type may be judged by some of its speediest individuals, but there remains sufficient of the blood of the old-time long-distance trotting horse to supply half-breds of a most useful kind for the mounted services of the Army and for certain kinds of farm work.

It is probable that the coming of the automobile has already signaled the decadence of the much-beloved long-distance road horse, but the craze for short-distance races on the trotting circuits and at the fairs had its influence in depressing the spirits of those who had followed with pride the development of the vigorous horses, equal to the effort of long-distance drives and races with two-, three-, and four-mile heats.

The present generation may not see a revival of public interest in the Standard Bred horse. Men who never had the courage and other qualifications to engage in the very human pleasure of driving a fine horse do not hesitate to speed up automobiles beyond the limit of safety to themselves and the public, or to mortgage their all for the possession of the latest model.

## THE MORGAN HORSE

*(For illustration see Color Plate XXI)*

A hundred years ago a tavern-keeper in Massachusetts moved to Vermont, taking with him a wonderful little stallion, which has perpetuated and made famous the name of his master, Justin Morgan. The breeding of this horse remains one of the unsolved mysteries, but his prepotency in perpetuating his own excellent qualities has given to the world a new breed, long and favorably known as Morgans. Ability to transmit his qualities descended to his sons and fixed the type to which the Government in later years has rigidly adhered.

In the effort to find a recognized aristocratic ancestry for Justin Morgan, he has been traced to mythical forebears, but he needed no bolstering up of the past, for his reputation had already been made by what he had transmitted.

The type of horse which has descended from Justin Morgan bears little resemblance to the Barb or Arabian and none at all to the Thoroughbred, nor are the Morgan gaits typical of any of the families named.

Justin Morgan was not a large horse, being only 14 hands in height and weighing less than 1,000 pounds. He was of dark-bay color, with black mane, tail, and legs. He had a short back, with long and sloping shoulders. His body was round, close-ribbed, with a deep and wide chest. His legs were short and extremely well supplied with hard muscles. He had long hair about the fetlocks and his feet were small and well shaped.

This founder of a most useful breed was entered in many contests in Vermont and won in both trotting and running races. There is nothing to show that he was matched in running races, however, with any of the blue-blooded racing stock which existed abundantly in America during his lifetime; nor was the original Morgan especially noted for speed as a trotter—a quality, however, which was materially developed in some of his descendants.

Being of no established breed then registered, it is not surprising that the mares selected for mating with Justin Morgan cannot

be traced with any degree of certainty, although he continued in the stud for more than 20 years, long after his sons and daughters had added many laurels to his early fame.

The second generation of Morgans bred true to type, but many were of slightly increased height and weight. This change was more marked in the third generation; but the Morgan horse has ever been characterized by his staying qualities and consistent performance rather than by size and fast records. In fact, the effort to cross-breed for speed was a serious blow to the Morgan stock, for, while producing a few superior animals, the general run of the breed, not fast enough for racing, were overlooked, and America came near seeing the end of a most useful type of horse which had been originated in the country.

Probably no horse ever received more attention from the public in his day than Ethan Allen, a son of Black Hawk, he by Sherman Morgan, the son of the original Justin Morgan. It was the good fortune of the writer, when a boy, to witness a great race by Ethan Allen.

Having been brought up in a blue-grass region, where only the Thoroughbred was held in esteem for racing, my interest had never been aroused in trotting horses. My father informed me that the race scheduled for June 21, 1867, between Ethan Allen, with a running mate to pull the wagon, and Dexter would be a historic contest and that I might attend as a special favor. Ethan Allen and mate won in three straight heats, the time recorded being 2.15, 2.16, and 2.19. Dexter made a great race, but the running mate with his opponent was a serious handicap.

The Morgans, while not abundant in the country, are well distributed at the present time and are so much appreciated that there is no probability of their being allowed to lose their identity, especially since the Government has seriously interested itself in their perpetuation.

The Morgans have gradually increased in height and very slightly in weight since the breed first came into notice. They now average about 15 hands and weigh about 1,000 pounds, sometimes, however, going considerably beyond that, to 16 hands and 1,200 pounds.

The Morgans are usually chestnut, brown, bay, or black in color, white marks not being common. They have always been admired for their useful qualities rather than for speed.

The breed is noted for smooth lines, stylish action, endurance, easy-keeping qualities, and docility. Their small ears, fine eyes, and crested necks give them an attractive appearance. They have a fine, natural knee action, which some of them have transmitted to standard-bred and saddle-horse families to their manifest advantage.

That the Morgans have lost none of their fine qualities is attested by the performances in the annual endurance rides conducted in recent years under the patronage of a number of associations and lovers of the horse.

The last endurance ride was held during the autumn of 1922. Gladstone, a registered Morgan gelding, won second place under conditions which were rather grueling. Gladstone's half-brother is a veteran of three previous endurance rides. Gladstone was sired by General Gates, for several years at the head of the Government Morgan stud.

Gladstone was foaled in 1913 and remained at the Government farm until he was four years old. He was then sent to the Government experimental farm in Maryland, where he was used in the station wagon, making many trips each day. With a record for reliable work, he was selected as one of the pair used in the carriage of the Secretary of Agriculture in Washington. He continued this work for several years.

He was returned to the Government horse farm in June, 1922, and prepared to take part in the endurance ride. He was worked during the haying season, after which he was used under the saddle until the date of the endurance ride.

Many of the entries which exceeded Gladstone by 200 pounds were among those compelled to fall out. Gladstone finished the test in excellent condition, with the same score as accredited to the winner and only three points behind in time. The official record states regarding Gladstone: "Sound as when started."

When the sire of Gladstone and Castor died, the post-mortem examination showed only five lumbar vertebræ. Similar conditions have been found to exist after post-mortems in other cases. Should the existence of only five lumbar vertebræ be characteristic of all the Morgans, that would suggest descent from the Arabian (see text, page 496), but it would require remarkable prepotency of sire to fix an anatomical change of marked importance in the foals of such an assortment of mares as were known to have been bred to Justin Morgan and his sons.

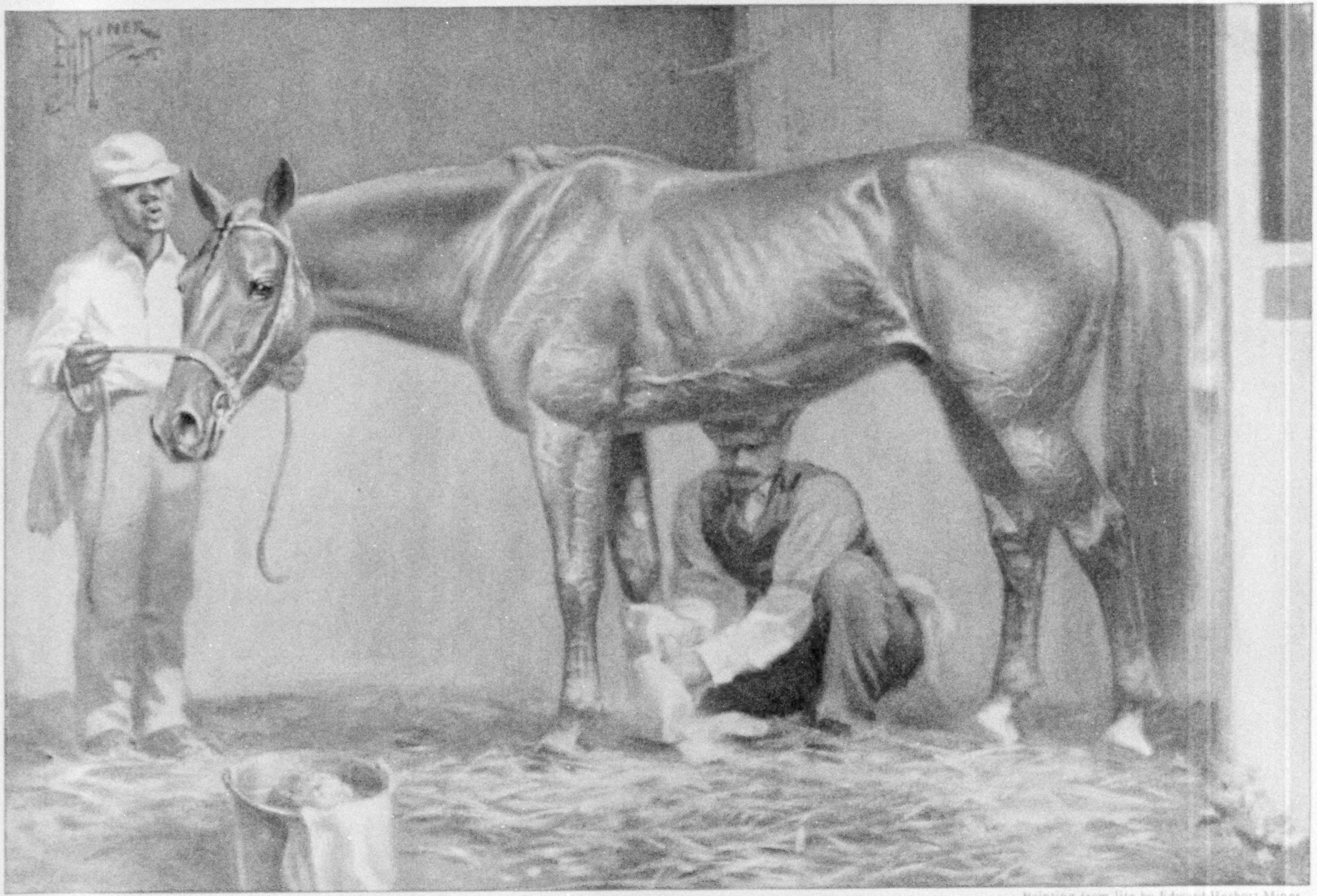
## POLO PONIES

*(For illustration see Color Plate XXII)*

Polo, in its simpler form as hockey on horseback, is an ancient game. The earliest recorded history of polo is found in Persia, from which country the game spread westward to Constantinople and to the east through Turkestan, Tibet, and China. In its earlier form, polo consisted of feats of horsemanship, involving skill with stick and ball. The Chinese game was played about the year 600 A. D. with a light wooden ball.

Grounds were first laid off in Persia in the sixteenth century, with limits of 300 by 170 yards, and the game was played by four on a side. This method was taken up in India, and the game consisted of dribbling the ball toward the goal.

The game was neglected for several centuries, but a revival began in Bengal in 1854, since which time it has never lost favor. Since it made its way into England and Ireland it has become a fast, hard-riding, hard-hitting contest with heavy sticks and large balls.

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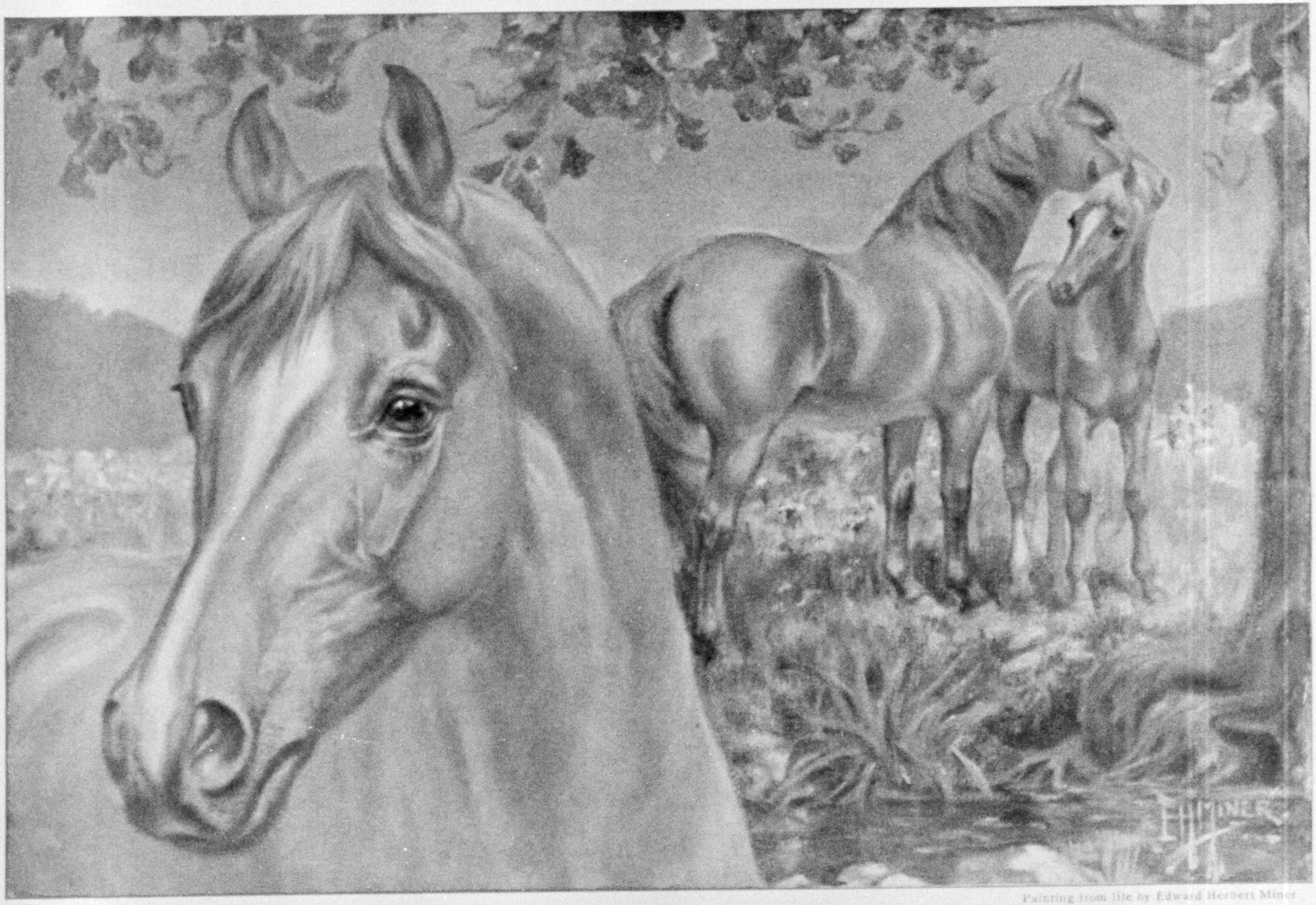
STANDARD BRED HORSE

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MORGAN

The first match of modern polo, with large wooden balls, was played in England in 1871. The first organized modern polo tournament on record took place at Hurlingham, when the Royal Horse Guards won the first Champion Cup in 1876.

During the first 20 years of polo comparatively few clubs were organized, but since that time it has become a very popular game, so much so, in fact, that the younger element, especially of the Army, wonder how their forebears ever managed to get along without it. It is now played in all the larger garrisons around the world, and the number of civilian clubs is constantly increasing.

Polo gradually made its way to America, and has been pursued with such enthusiasm as to develop many excellent teams, some of which have competed with success in international matches. It is especially encouraged in the Army, and the excellent results, in the improvement of horsemanship alone, have justified the expenditure of time given up to the training for the game.

When polo was first taken up, it was thought any good, stout, active pony would do to follow a ball around, but as teamwork developed and rules based on experience were formulated, the possibilities of the game with fast, well-trained ponies became more apparent.

Interest was aroused in the breeding of ponies for the game, and in 1893 the Polo Pony Stud Book Society was formed in England with the avowed object of improving the breed of polo and riding ponies. The society holds shows and awards prizes for the various classes of riding ponies. The idea, of course, was to establish a breed of ponies of a definite type, toward which breeders might work in meeting the demand for polo mounts.

No pony could be admitted to registration until four years of age, nor any which exceeded 14½ hands in height.

It will be readily understood how very difficult the establishment of a breed of ponies became for use in a game which called for a perfect horse not exceeding 14½ hands in height. If it were merely to breed animals of that height fit for saddle purposes, there would be no need of looking further than the Arabians, Barbs, and other recognized families of small horses.

But the game of polo demands a strong, active, alert, fast horse, with approved stamina and ability to carry weight. There are not many feather-weights playing the game, and for those that constitute the majority of players, the very highest type of horses is demanded.

It was presumed that if Thoroughbreds of the proper size could be bred, that would solve the question; but here was encountered the historical fact that when the Thoroughbred first became an established breed the average height was about 14 hands, and that to increase this to the present average height of Thoroughbreds required a quarter of a century for each rise of one inch.

With good pastures, warm stables in winter, and abundance of grain, it would be quite impossible to breed downward. Even the Shetland and other well-established ponies increase in height as soon as brought under a stable routine which includes full feeding.

There remains always the chance in mating a Thoroughbred stallion with a mare of established pony lineage, provided the desirable polo qualities exist on both sides; but the resulting breed could hardly be expected to perpetuate itself with predominant polo tendencies within a reasonable number of generations. It would seem, therefore, that polo teams are reduced to the system in vogue in the professional baseball leagues, where recruits are obtained by scouts sent out to observe all those who seem to have the necessary qualifications for the game.

Polo was introduced in America in 1876 by the late James Gordon Bennett and, following the British custom, the game was played on ponies.

The game made its way on its merits, but it was not until 1890 that the American Polo Association was organized. As the number of players increased and the value of team play became more fully recognized, it was observed that, other things being equal, the team with the best ponies usually won.

This led to a nationwide search for ponies of sufficient speed, stamina, and adaptability to training, and when it became apparent that the speed of a Thoroughbred was necessary, there began a gradual increase in the size of horses allowed in the game, until now the animals are mainly Thoroughbreds of normal size. A small horse that meets all requirements is not shunned, but animals used in recent matches averaged from 15 hands to 15 hands 3 inches and occasionally one of 16 hands was played. When these animals are referred to as Polo Ponies it is merely an act of courtesy.

It was believed that a team with unlimited financial backing could always mount themselves in such form as to make success impossible for others, but this view has not been entirely sustained by experience. Then some inequalities have been adjusted by a system of handicapping.

Where teams are mounted on animals of the same type and size, there is every reason for playing the game, even though the animals are not up to the most desirable standard. Some of the best polo players of England and Ireland have had their first experience in India, where many small horses are used. Arabians, half-breds, Australians, and native country ponies have all been used in matches, and the game is played the year round.

Some polo mounts have well-earned reputations as general utility horses in the game, but many others, like the players themselves, have personal equations which suggest their employment in particular positions. A polo player who owns all his mounts adjusts his purchases, among other things, to his own weight. Army players using Government mounts have to adjust the distribution of horses to meet the questions of weight, light or heavy hands, and horsemanship in general.

The army had the good fortune to win the Junior Championship in 1922. The average height of the horses played was about 15½ hands; average weight, about 975 pounds, in

playing condition. Eighteen out of the string of 25 were Thoroughbreds; some of the others were three-quarter bred. They were of the big barrel, short-legged, stocky kind, with short backs and straight legs. No crooked hocked, splay-footed, or calf-kneed horse was considered fit for the game.

More than half of the mounts were mares, and, in temperament, they were credited with being better adapted to the game than geldings. In the modern game of polo the horse must have strength, health, good wind, and some flesh, with racing speed.

For the present game at racing speed, shoeing has become all-important. The method used for the army horses is to put on the front feet handmade steel rim shoes set in well at the heels and not too long. For the hind feet, light Phœnix shoes No. 1 are used. The outside heel calk is round and blunt, about one-quarter of an inch high, while the inside calk is tapered thin and runs sloping toward the toe. The reason for this is that when the horse puts his foot down and stops straight on his haunches, the foot will not slip back, as it has the bearing of both calks. It will not slip forward, as it has full bearing on the outside calk, while the sharp inside calk cuts in enough to hold it. Then when the horse turns on his haunches the outside calk will hold the foot in place, while the inside heel slips over the grass and prevents the horse from twisting his ankle or hock.

## THE MUSTANG

*(For illustration see Color Plate XXIII)*

After Columbus had made known his discovery of the New World, the Spaniards first established themselves in Santo Domingo, which formed the base of subsequent expeditions to Cuba, Mexico, Yucatan, South America, and Florida.

Horses were brought to the islands in small numbers at each voyage, but gradually the aggregate was sufficient to admit of carrying forward to the mainland mounts for the more important and responsible of the explorers.

Cortez took with him 16 horses, and his comrade, Bernal Diaz del Castillo, who preserved for posterity an account of the Conquest of Mexico, wrote out a minute description of each of the animals, comprising 11 stallions and 5 mares. This document is so little known that it is deemed worth while to present it in translation:

"Captain Cortez, a light chestnut stallion, which presently died in San Juan de Ulúa.

"Pedro de Alvarado and Hernando López de Avila, a very good chestnut mare, for sport and racing, and the half of which Pedro de Alvarado bought or took forcibly upon our arrival in New Spain (Mexico).

"Alonzo Hernández Puertocarrero, a silver gray mare of good racing qualities, that Cortez bought with golden ornaments.

"Juan Velásquez de León, another silver gray mare, very powerful, that we called Short-Tailed, very restless and a good racer.

"Christóbal de Oli, a dark chestnut stallion, very good.

"Francisco de Montejo and Alonso de Avila, a brownish sorrel stallion: unfit for war purposes.

"Francisco de Morla, a dark chestnut stallion, a great racer and restless.

"Juan de Escalante, a light chestnut stallion, with three white feet: was no good.

"Diego de Ordás, a silver-gray mare, barren, fair, but a poor racer.

"Gonzalo Dominguez, an excellent horseman, a dark chestnut stallion, very good and a great racer.

"Pedro González de Trujillo, a good chestnut stallion, a perfect chestnut, that ran very well.

"Moron, a native of Vaimo, a cream-colored stallion, with marked forefeet and very restless.

"Vaeno, a native of Trinidad, a dun stallion with black points: does not go good.

"Lares, a very good horseman, a very good stallion, of a somewhat light chestnut color and a good racer.

"Ortiz the musician and Bartolomé Garcia, who used to have gold mines, a very good dark stallion that they called Muleteer: this was one of the good horses that we carried in the fleet.

"Juan Sedeño, a native of Havana, a chestnut mare, and this mare foaled on the ship. Said Juan Sedeño passed as the richest soldier that there was in all the fleet, since he brought his own vessel, and the mare and a negro, also cassava and bacon: because at that time one could not find horses nor negroes except at their weight in gold, and the reason of not carrying more horses, because there were none."

Of this contingent of sixteen horses, two were killed in the first battle. Alvarado, who joined Cortez at Vera Cruz with 150 men, brought 20 horses. Narvaez followed with 980 horses.

Cortez completed the conquest of Mexico within two years, after which horses continued to arrive with adventurous Spaniards hastening to the land of silver and gold.

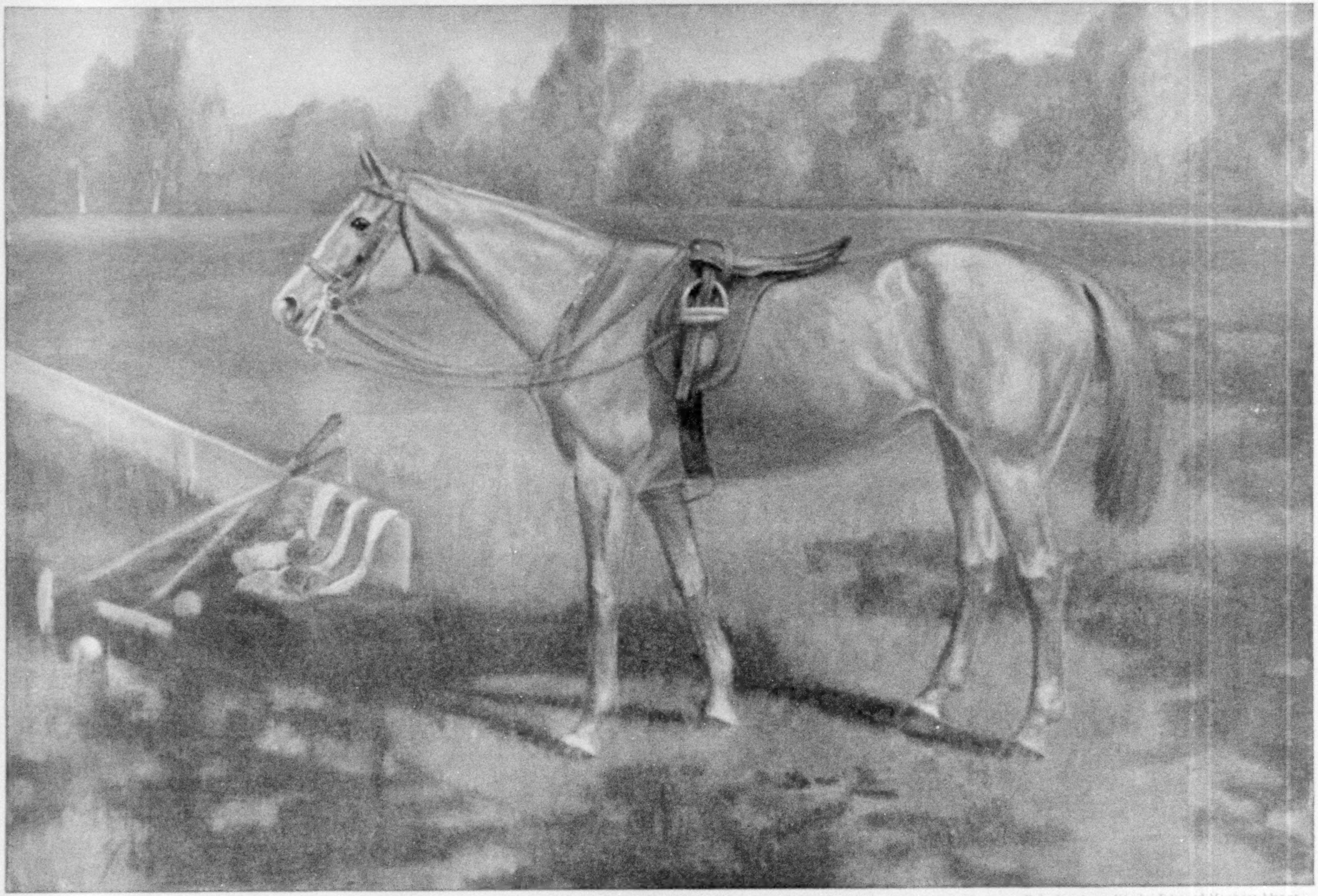
The horses taken to Mexico, beginning in 1519, together with those landed in Florida by De Soto, 115 in number, in 1539, and of which a few were later abandoned on the west bank of the Mississippi River, comprise the nucleus from which sprung the wild horse herds of Mexico and Texas, known as Mustangs, which later overran the prairies and furnished the mounts of many Indian tribes.

Of the horses landed by Cortez, two were of the famed Jennet breed of Spain, which may account for the fine type of animals often found in the wild herds of after years.

The Mustangs repeated the bay, gray, dun, and other colors usually found in Spanish horses, and by constant interbreeding developed the piebalds or pintos of white spotted with bay, sorrel, or dun.

As the Spaniards carried no forage, the horses were accustomed to grazing, and, when once they had strayed from the domesticated herds to the prairies, they had only to protect themselves and their colts from the attacks of wild beasts and multiply in numbers.

The offspring of these feral horses were as wild as though their progenitors had never known the halter, and when, with the passing



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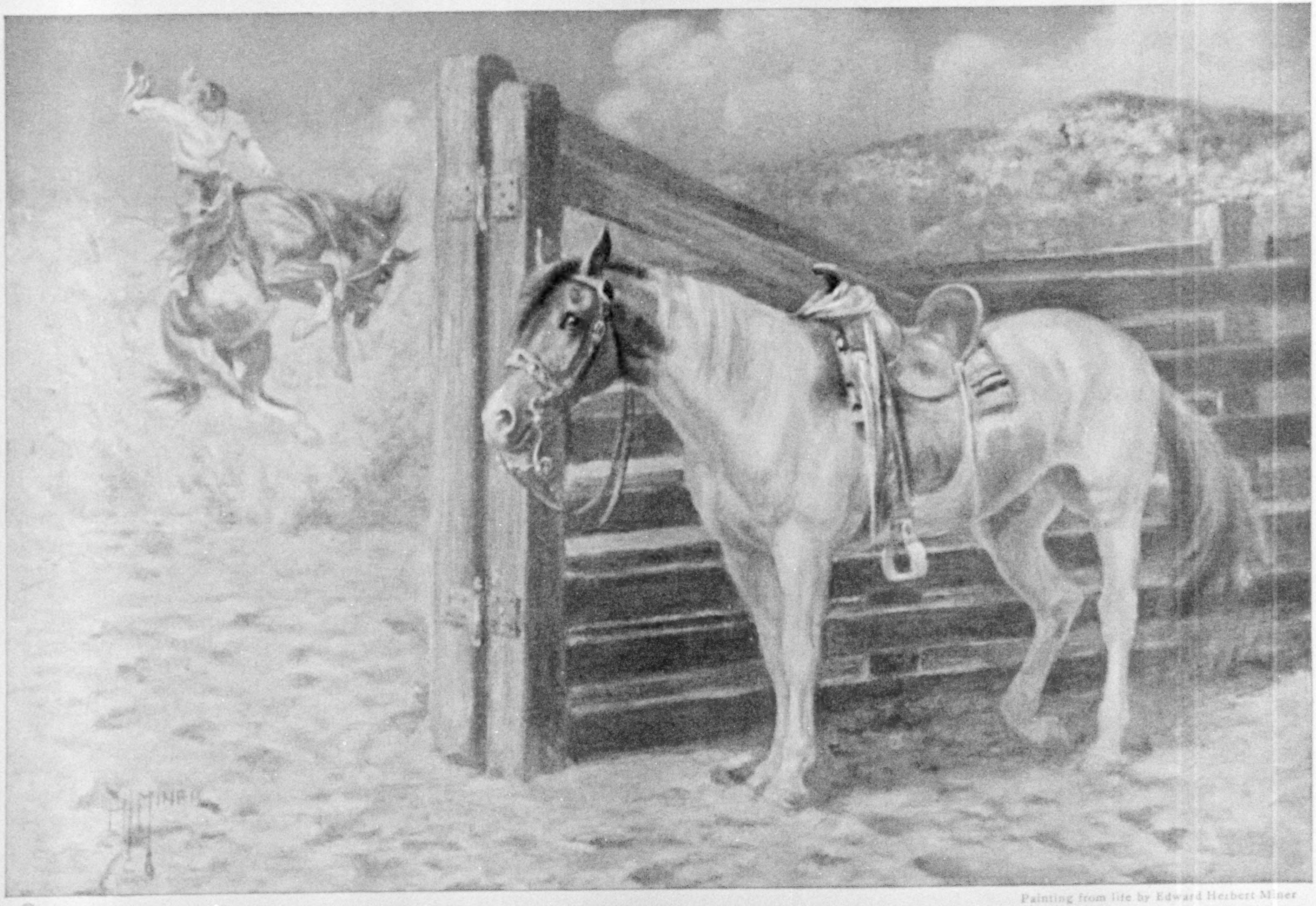
POLO PONY



© Painting from life by Edward Herbert Miner

MUSTANG

of the years, the American frontier pushed its way westward and they first felt the lasso tightening about their necks, it may be readily understood that they put into their resistance all the tricks learned in the struggle for an unfettered existence.

Most of them succumbed in time and became amenable to the control of the Indian and the white man, but some were of indomitable spirit and became the Broncos of unsavory reputation, whose descendants have made possible the exciting scenes at Wild West Shows, Cowboy Reunions, and Frontier Days.

There is no distinct breed of horses known as Bronco, this term being used to indicate individuals of the bucking, fighting, outlaw type, found among range horses of the Mustang breed. Their methods of resistance are not observed among farm horses and seem to have come from the necessity thrust upon generations of progenitors of defending themselves from wolves, mountain lions, and other wild animals which preyed upon the herds.

When the army led the way to the distant frontiers and remained to protect the thin line of pioneers advancing westward beyond the Missouri River, the Indians were found in possession of vast herds of ponies. Not only on the prairies east of the Rocky Mountains, but along the shores of the Pacific as far north as Oregon and Washington, the Mustang had made his way.

In the vicinity of the old missions of California the Spanish adventurers had established ranches which were veritable principalities, and it was there and along the Mexican border that Americans first acquired familiarity with the Mustang as a cow-pony.

The hardy, sure-footed little horses were bought half a century ago to mount the cavalry in Arizona, California, and Oregon.

With opportunity for selection from the herds of Chico Foster and others, maintained on the ranges of the old Spanish grants of Southern California, there was little difficulty in finding horses that possessed tremendous endurance and that carried with apparent ease a trooper and his equipment, averaging one-fourth the horse's own weight, and without forage other than that obtained by grazing at night in herds.

The writer well remembers one of these horses purchased by him and ridden into Mexico in 1880, when the American and Mexican armies cooperated in destroying Victorio, the greatest of all Apache chiefs, and his band. The horse was well described by an ancient writer, Posidonius, a traveler in Spain in the year 90 B. C., as "starling colored," dark-gray flecked with white. This writer further declared these Spanish horses superior to all other breeds in fleetness and endurance. These latter qualities were not due to color, however, for one of the best horses in the regiment, after many years of hard scouting over desert and mountain, was a small dun-colored animal, with a dorsal or dark stripe along the back from mane to tail.

The ancient and always prevalent idea of cross-breeding to improve has brought about great changes in the Western horse herds, many of which now show the Thoroughbred infusion of blood. They may be improved in size, speed, and perhaps appearance, but no admixture of breeds will ever produce a gamer, hardier, and more enduring animal for use in the desert and mountain regions of the far West than the wide-ranging Mustang, hand for hand of height, and pound for pound of weight.

## THE MULE

*(For illustration see Color Plate XXIV)*

The mule is a hybrid animal long known in history, and with a record of usefulness and service in war and peace which makes him quite the peer of the more famous war horses.

Strange to say, the mule cannot reproduce his kind, being derived as the result of mating the jack or male ass with the mare, or female, of the horse species. The jack is the normal product of mating a jack with a jennet. Another hybrid, the hinny, may be obtained by mating the jennet with the stallion of the horse species, but the resulting cross is not an animal of useful type.

The ability of mules to endure hardship and perform satisfactory service under adverse conditions has established them in the esteem of farmers and planters throughout the world. Of course, the mule, like other animals, responds to good feeding and care and renders his best service under favorable conditions.

The popularity of the mule is attested by the steady demand and constantly increasing number of mules bred at home and abroad.

The belief, borne out by experience, tends to show that the mule will do the same work as the horse, in many fields of employment, on less food and with less tendency to lameness and disease. The mule is less nervous, less irritable, and is credited with longer lease of life than the horse.

While mules are not exactly temperamental animals, they undoubtedly render the best service in the hands of men who understand how to handle them.

In general form and appearance the mule closely resembles the horse, and in judging mules the same general points of perfection are looked for. The nearer the mule approaches the ideal desired in a draft horse, the more valuable he is from the commercial point of view.

The mule retains certain characteristics of the jack, such as long ears, the peculiarities of the tail, the shape of the hoof, and the unmistakable bray; otherwise the mule does not differ materially from his dam.

Quality in the mule, as in other animals bred for profit, is what all buyers look for. It was considered years ago that almost any old mare capable of having a colt would do to breed for a mule foal; but that unbusinesslike idea has been discarded, and a mare of good conformation, roomy, and of such size as to indicate she can bring into the world a worth-while foal is the standard now kept in mind by all breeders.

The conformation of the mule should be

compact, with a deep body, broad chest, full flanks, short back, and well-sprung ribs. Quality is indicated by a trim, fine ear, clean-cut head and joints, flinty flat bone, well-defined tendons, and soft, silky hair. An active, energetic animal is the type of mule most desired.

In the Army, mules are classed as wagon, pack, and saddle animals, while in the markets they are classified as draft, weighing from 1,200 to 1,600 pounds and from 16 to 17½ hands in height; sugar mules, weighing from 1,150 to 1,300 pounds, from 16 to 17 hands in height; farm mules, weighing from 900 to 1,250 pounds, from 15½ to 16 hands in height; cotton mules, weighing from 750 to 1,100 pounds, from 13½ to 15½ hands in height; and mining mules, weighing from 600 to 1,350 pounds, from 12 to 16 hands in height.

Exceptional mules of large size are usually sold for use in lumber camps and for heavy team-work in Southern cities. Pack mules for the army and for use on mountain trails, usually in connection with mining, are selected from the compact, short-backed, well-muscled animals, strength being more important than height.

Each class is further graded as to perfection of conformation, quality, condition, action, and, of course, soundness, varying from choice to inferior.

There is no special preference as to sex, since mules do not breed. The best mules are those having weight combined with heavy bone, large, well-shaped feet, strong, short backs, closely coupled, with abundant muscle over the loin and hind quarters.

The American jack is a composite of the blood of the best foreign breeds, and in developing him the breeders have emphasized the points most desired in his progeny—size, weight, bone, style, action, and quality.

The jacks selected as sires of jacks are reserved entirely for mating with jennets. The jacks selected for mating with mares to produce mules are not allowed to run with jennets, but are turned out as colts to run with gentle mares and young fillies. The knowledge that the best results are obtained in this way has come from a century of observation and experience.

As a general rule, the color of mules is black, brown, bay, sorrel, or gray, but there are occasional animals of cream, white, or mouse color. Sometimes a spotted or variegated coloring is found. These are known to the Mexicans as pinto, to the Southern negroes as Chickasaw, and to others as calico or circus mules. The solid colors and dark or iron grays are preferred and are believed to indicate the hardiest animals.

The ability of mules to render good service under very unfavorable conditions has induced the belief that they are not subject to the many ailments of horses, but this is not borne out by experience in stables where records are kept.

The writer was for many years in charge of wagon and pack trains, as quartermaster of a cavalry regiment, and had opportunity to observe both horses and mules, in ordinary service as well as during the prevalence of epidemics. Mules suffer from colds, pneumonia, colic, bowel impactions, and all forms of individual complaints in the same degree as horses.

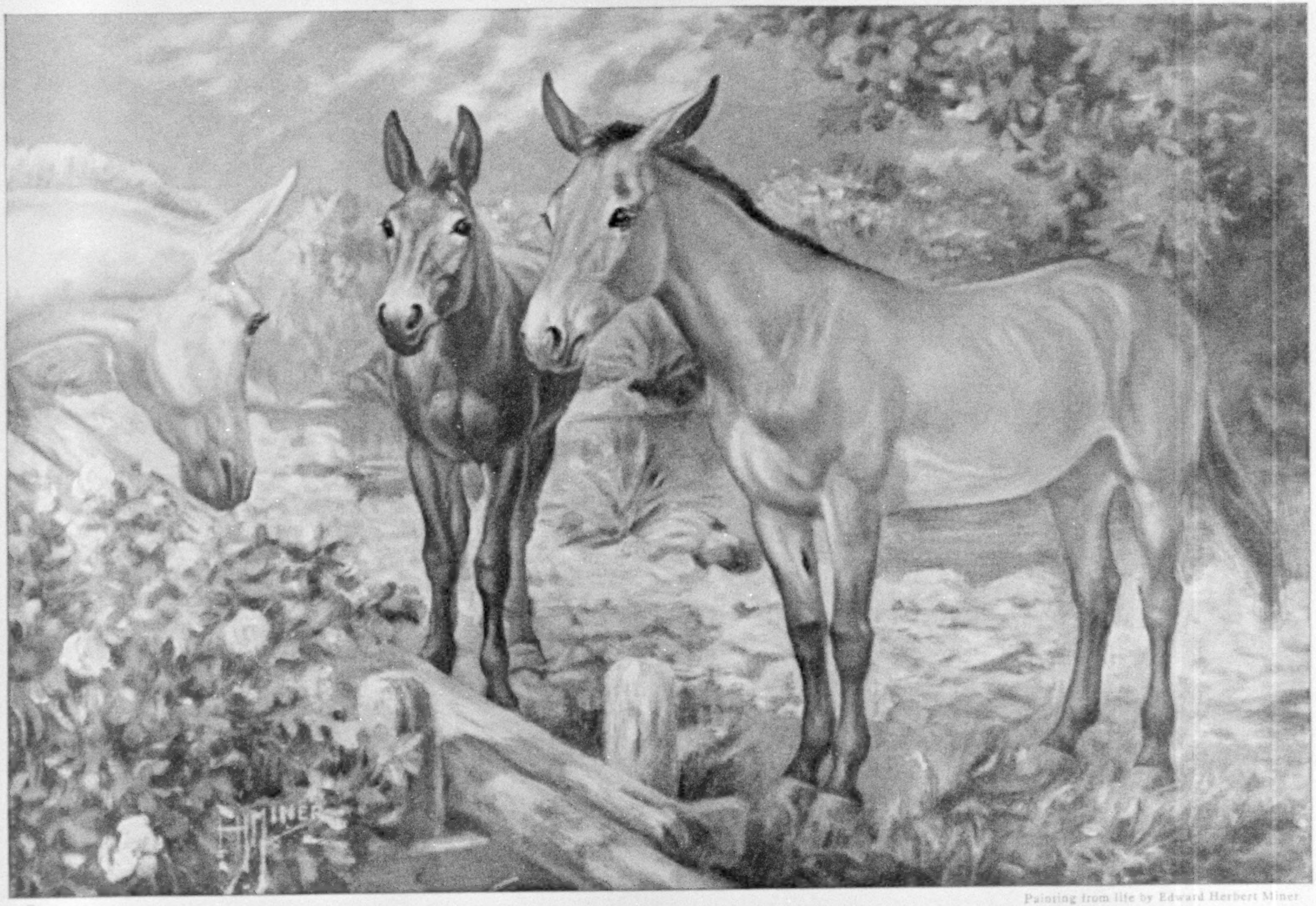
During the prevalence of contagious diseases, like farcy and glanders, and epidemics from germ infections, as in pink eye and influenza, mules were not found to be any more immune than horses. The peculiar, upstanding, flinty hoof of the mule may afford him some advantage over the horse, but he has his share of troubles.

As a matter of historic interest, General Washington's advertisement of the services of the Spanish jack presented to him by the King of Spain should be preserved. It was printed in a Philadelphia paper:

"*Royal Gift.*—A Jack Ass of the first race in the Kingdom of Spain will cover mares and jennies at Mount Vernon the ensuing spring. The first for ten and the latter for fifteen pounds the season. Royal Gift is four years old, is between 14½ and 15 hands high, and will grow, it is said, till he is 20 or 25 years of age. He is very bony and stout made, of a dark color, with light belly and legs. The advantages, which are many, to be derived from the propagation of asses from this animal (the first of the kind that ever was in North America), and the usefulness of mules bred from a Jack of his size, either for the road or team, are well known to those who are acquainted with this mongrel race. For the information of those who are not, it may be enough to add, that their great strength, longevity, hardiness, and cheap support give them a preference of horses that is scarcely to be imagined. As the Jack is young, and the General has many mares of his own to put to him, a limited number only will be received from others, and these entered in the order they are offered. Letters directed to the subscriber, by Post or otherwise, under cover to the General, will be entered on the day they are received, till the number is completed, of which the writers shall be informed, to prevent trouble or expense to them.

"(Signed) JOHN FAIRFAX,
*Overseer.*

"February 23, 1786."




© Painting from life by Edward Herbert Miner

MULE

(Continued from page 477)

but Flemish and Belgian horses of heavy type were in existence when the Romans invaded western Europe, and it is most probable that they supplied the infusion necessary to increase the size of the island stock.

It was not the practice of ancient warriors to use mares for war purposes, and it may be readily understood how every invasion of a country possessing native stock was followed by admixture of blood, with a tendency generally to improvement.

During the Crusades and for several centuries after, the armor worn by the knights was so heavy as to be quite beyond the power of the ordinary horse to carry. From the time of King John to the reign of Henry VIII much attention was devoted to the development of horses of large size, and statutes were enacted to encourage the breeding of the type later known as Shires.

Warriors of the clad-in-armor type relied upon sheer weight to beat down the enemy, for horses bearing upwards of 400 pounds were mere pack animals.

Fossil remains of the horse, as known to us, have been found in Nebraska, Texas, and at various places on the Pacific coast as far north as Alaska. Of especial importance was the discovery of remains in considerable numbers, representing all ages, in the asphalt beds at Rancho La Brea, in California, for it enabled scientific investigators to make comparisons and to determine that the ancient horses were of approximately the size of those of modern domesticated horses, their skulls ranging upward to even greater size than those of the latter.*

The first modern horses to land on this continent were brought by Cortez, and participated in the conquest of Mexico. Ferdinand de Soto brought horses to Florida and used them on his long march to the Mississippi. After his death and burial in the Father of Waters, as that river was long known, his followers crossed over. The horses then taken to the region now known as Texas and abandoned there, together with those coming in from Mexico, were the progenitors of the bands of wild horses that gradually spread over the prairies and became known as Mustangs (see text, page 521, and Color Plate XXIII).

Had the country over which they roamed remained unoccupied by the American frontiersman and settler, the Mustangs would eventually have vied in numbers with the buffalo, which roamed the prairies from Texas to Canada.

There was much of romance connected with the region ranged over by the Mustangs, and each band of wild horses was credited with leadership by the most wonderful stallion ever beheld by man. Many were captured, but the real leaders were always alleged to have escaped by reason of speed not possessed by any domesticated horse. Probably there was much blood of the Moorish or Barb horses among them in the beginning, and as other importations by the Spaniards in Mexico continued during several centuries, the wild bands were joined by others from the domesticated horse herds.

### WASHINGTON IRVING'S ACCOUNT OF A WILD-HORSE HUNT

The presence of these wild horses on the prairies led to the organization of many parties bent on their capture. No less a personage than Washington Irving journeyed to the West and joined one of these parties, whose operations he thus described:

"We left the buffalo camp about eight o'clock, and had a toilsome and harassing march of two hours, over ridges of hills. About ten o'clock in the morning we came to where this line of rugged hills swept down into a valley, through which flowed the north fork of the Red River.

"As we cast our eyes over this fresh and delightful valley, we beheld a troop of wild horses, quietly grazing on a green lawn, about a mile distant to our right, while to our left, at nearly the same distance, were several buffaloes, some feeding, others reposing and ruminating among the high rich herbage, under the shade of a clump of cottonwood trees.

"The whole had the appearance of a broad, beautiful tract of pasture land on the highly ornamented estate of some gentleman farmer, with his cattle grazing about the lawns and meadows.

* See "The Larger North American Mammals," by E. W. Nelson, in the NATIONAL GEOGRAPHIC MAGAZINE for November, 1916.

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HIS ROYAL HIGHNESS, THE PRINCE OF WALES, UP

The heir to the throne of the British Empire is an ardent devotee of horse racing. He is here shown taking the water jump during the Brigade of Guards inter-regimental race at Astwell Mill, on his Pet Dog, with Captain W. G. Shaw-Stewart on Jean III.

"A council of war was now held, and it was determined to profit by the present favorable opportunity and try our hand at the grand hunting maneuver, which is called ringing the wild horse.

"This requires a large party of horsemen, well mounted. They extend themselves in each direction, singly, at certain distances apart, and gradually form a ring of two or three miles in circumference, so as to surround the game. This has to be done with extreme care, for the wild horse is the most readily alarmed inhabitant of the prairie and can scent a hunter at a great distance, if to windward.

"The ring being formed, two or three ride towards the horses, who start off in an opposite direction. Whenever they approach the bounds of the ring, however, a huntsman presents himself and turns them from their course. In this way they are checked and driven back at every point, and kept galloping round and round this magic circle until, being completely tired down, it is easy for the hunters to ride up beside them and throw the lariat over their heads.

"The prime horses of most speed, courage, and bottom, however, are apt to break through and escape; so that, in general, it is the second-rate horses that are taken."

This particular hunt was marred by Antoine, the cook of the party, whom Irving described as a mercurial little Frenchman, and who was more successful than he deserved to be, for he managed to catch a beautiful cream-colored colt, about seven months old, which could not keep up with its companions.

### SPANISH HORSES PROGENITORS OF SOUTH AMERICAN HERDS

Similarly, in South America, Spanish horses escaped, or wandered off to the uninhabited pampas, and in the course of time were the bases of innumerable small herds. Had they all remained without interference, their numbers would have been much greater; but they were preyed upon by wild animals, especially large wolves and jaguars, which did not hesitate to attack full-grown animals, but were especially formidable to young colts.

In defense, the wild horse was prone to use his hind feet, but in the battles which raged for the leadership of the herds, the stallions used their teeth and struck with their fore feet to the accompaniment of squeals and snorts which signified that to them death was preferable to defeat.

The old stallions habitually drove out the younger ones, but the latter usually managed to win favor and assemble a band of mares of their own following. When the stallion leaders became enfeebled with age they, in turn, were unceremoniously driven out by the youthful and more lusty rivals, perpetuating the survival of the fittest in never-ending round.

### ADVENT OF THE HORSE CHANGED INDIAN TRIBAL LIFE

The presence of these wild horses on the prairies was responsible for an entire change in the habits of the American Indians who occupied the plains, as well as of those who were gradually forced back by the ever-advancing frontier of the whites.

Prior to the coming of the Europeans, the Indians traveled on foot and located from time to time their simple villages according to the supply of game, on which they depended mainly for food.

The coming of the horse changed all that, and at an early date the Comanches and other tribes which hunted along the fringes of the buffalo herds began to hunt on horseback and to follow the herds until their supply of skins and jerked or dried meat for the winter season had been secured. This led to infringement upon one another's hunting grounds, which had ever been a cause for war. From that time until the whites had overrun the western country, killed off the game, and fenced in the land, there was no peace among many of the Indian tribes.

Nor were tribal depredations confined to warring upon one another, for the Indians became expert horse thieves and forced upon travelers through the Indian country incessant watchfulness to avoid having their herds run off. The sudden appearance of a band of yelling, painted savages, riding at high speed and waving buffalo robes, would stampede any herd of domesticated animals and render them easy prey to Indian marauders.

The horses introduced along the eastern seaboard by the settlers in Virginia, Penn-

Photograph by C. C. Cook

A STEEPLECHASE TUMBLE AT SHEEPSHEAD BAY, NEW YORK

sylvania, New York, and New England were not all derived from the same source, nor did their breeding proceed along exactly the same lines.

HORSES OF THE COLONIAL PERIOD

The early colonists of Virginia brought over horses, the first of which were eaten during the starving period at Jamestown, but importations continued and it was reported that in 1611, "They have brought to this colony 100 cows, 200 pigs, 100 goats, and 17 horses and mares."

As individual plantations were developed, the need for saddle horses, in a country without roads other than bridle paths through the forests, became great, and it was not long before Virginians were accounted the best horsemen in the colonies.

Washington maintained an extensive breeding establishment to provide horses for his own use and for the improvement of his neighbors' stock. Among the famous stallions of their day at Mount Vernon were Sampson, Magnolia, Leonidas, Traveler, and Gift.

As far back as 1761 George William Fairfax, a near neighbor of Washington, wrote from England expressing a wish that arrangements be made to breed his mare Moggy to Washington's Thoroughbred stallion Gift.

The men of their generation relied upon the horse not only as their sole means of transportation on land, but also for the pleasures of the hunt and the race course.

Washington was not unmindful of the lowly side of agriculture, for his imported jacks from Spain and Malta were at the head of the mule industry of Virginia.

Trials of speed were the occasions of many notable gatherings. Washington was a steward of the Alexandria Jockey Club, and the races in Fairfax and adjoining counties of Virginia always proved strong attractions.

The entire family at Mount Vernon usually attended the races at Annapolis, in the adjacent colony of Maryland. On these occasions the great coach, the coachmen, the footmen, the postilions, and the horses were sent across the Potomac the day before, so as to be in readiness for an early start the next morning.

It does not require much imagination to picture the impression that the arrival of the Mount Vernon cavalcade made on

Photograph by Paul Thompson

THE FRENCH CAVALRYMEN ARE AMONG THE MOST SKILLFUL EQUESTRIANS IN THE WORLD

When Charles Martel defeated the Saracens at Tours and Poitiers in the eighth century, many horses were taken and distributed throughout France. The Crusaders also are credited with bringing home choice animals (see text, page 508).

the ladies and gentlemen of Maryland foregathered for the social gayeties incident to the racing season.

Washington's favorite diversion was fox-hunting. He was always superbly mounted and was reputed a good rider. He habitually dressed for the hunt in blue coat, scarlet waistcoat, buckskin breeches, top boots, and velvet cap, and carried a whip or crop with a long thong in his hand.

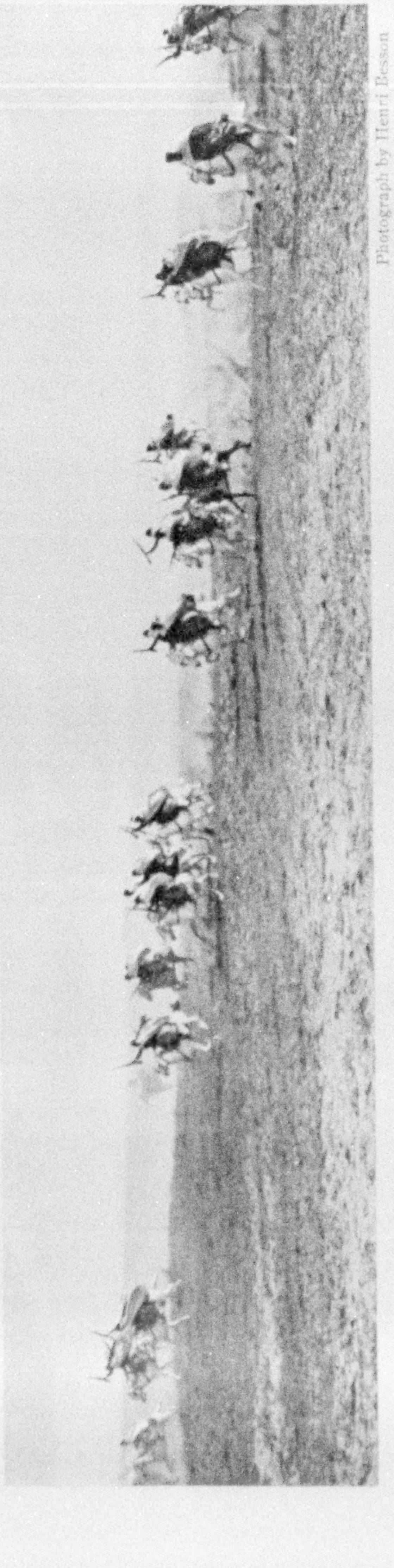
His stables and equipages were always in perfect order. It was his custom to rise early and inspect them about sunrise. Except when absent as "general of all the forces of the United Colonies," and later as President of the United States, he continued to give his attention to plantation details to the last day of his life, and rode with the ease and gracefulness of a much younger man.

### PRESIDENT WASHINGTON'S HORSES A SOURCE OF ADMIRATION

When Washington was President his horses were a source of surprise and admiration. The coach team of white horses always appeared in spotless condition. The night before they were to be used they were covered with a paste of which whiting was the principal ingredient; then they were swathed in body clothes and bedded in clean straw.

The next morning, when the paste had dried, it was well rubbed and brushed and gave the horses a glossy and satinlike appearance. Their hoofs were blackened and polished and their mouths washed. They were then led forth ready in every respect for the light that has ever beaten upon the equipages of rulers of nations.

Washington and his friends set the pace for tidewater Virginia, and their habits and customs influenced the widely dispersed Virginians as they passed over the mountains to create new commonwealths. Their traditions formed the tapestry of dreams handed down from generation to generation of horsemen, and the spell of the tidewater aristocracy still lingers in the lavender of memory.



Photograph by Henri Besson

FANTASIA (AN EXHIBITION OF EVOLUTIONS ON HORSEBACK) PERFORMED BY ARABS BEFORE A HIGH OFFICIAL OF THE FRENCH REPUBLIC ON A VISIT TO ALGIERS

It was not until about 1750 that the importation of English race horses began. Long prior to that time, however, racing had been a popular sport in Virginia, and the distances were far greater than any run in recent years. Heat races of one, two, and even four miles were common events. The horses were selected by their owners as worthy to carry their colors, as well as their money.

The horses of the early period were small, none being above 15 hands and most of them half a hand less, the measure of a hand being four inches. Just what breeding gave them their speed will never be known. Some had come from Ireland, which had long been noted for its speedy hunters.

Prior to the coming of the Thoroughbred, the winners were mated to perpetuate the speed of both sire and dam.

While the men of fortune were inclined to the long-distance and heat races, another element developed the short-distance horses, which competed over a straight course of one-fourth mile, and from that early period to about the time of the Civil War, quarter racing was a very popular sport, and not confined to regular race tracks. Rarely indeed was there a session of court without its quarter race as a side issue.

### GAITED HORSES DEVELOPED IN VIRGINIA

At a very early period the Virginians began the use of pacing and racking horses, and the best animals were bred to perpetuate these gaits as natural gaits of the horse.

In the pace, the horse moves the two feet on each side together; the rack, or single foot, is a movement in which the feet come down singly, in a rapid, shuffling, easy motion, which gets over long distances rapidly and with ease to the rider.

These saddle horses were trained to the single foot, fox trot, and running walk, and in time were found all over the South, being much preferred to the walk, trot, and canter horse usually found in the North.

The pace had been a popular gait in the early history of England, but lost its favor soon after the development of the Thoroughbred.

Photograph by Charles Reid

SHIPPING PONIES FROM THE SHETLAND ISLANDS

Formerly these diminutive horses were used principally in the coal mines and by the fishermen along the coast. When used as a pack or draft animal, the Shetland, weight for weight and inch for inch, can hold his own against the entire horse world (see text, page 489).

Courtesy Metropolitan Museum of Art

"THE HORSE FAIR," BY ROSA BONHEUR

Before this artist's time, women had not attempted the reproduction of animated scenes of this type from animal life. One of Rosa Bonheur's chief claims to fame is the faultless anatomy of her animals. The models for this stirring picture were Percherons, nearly all of them stallions.

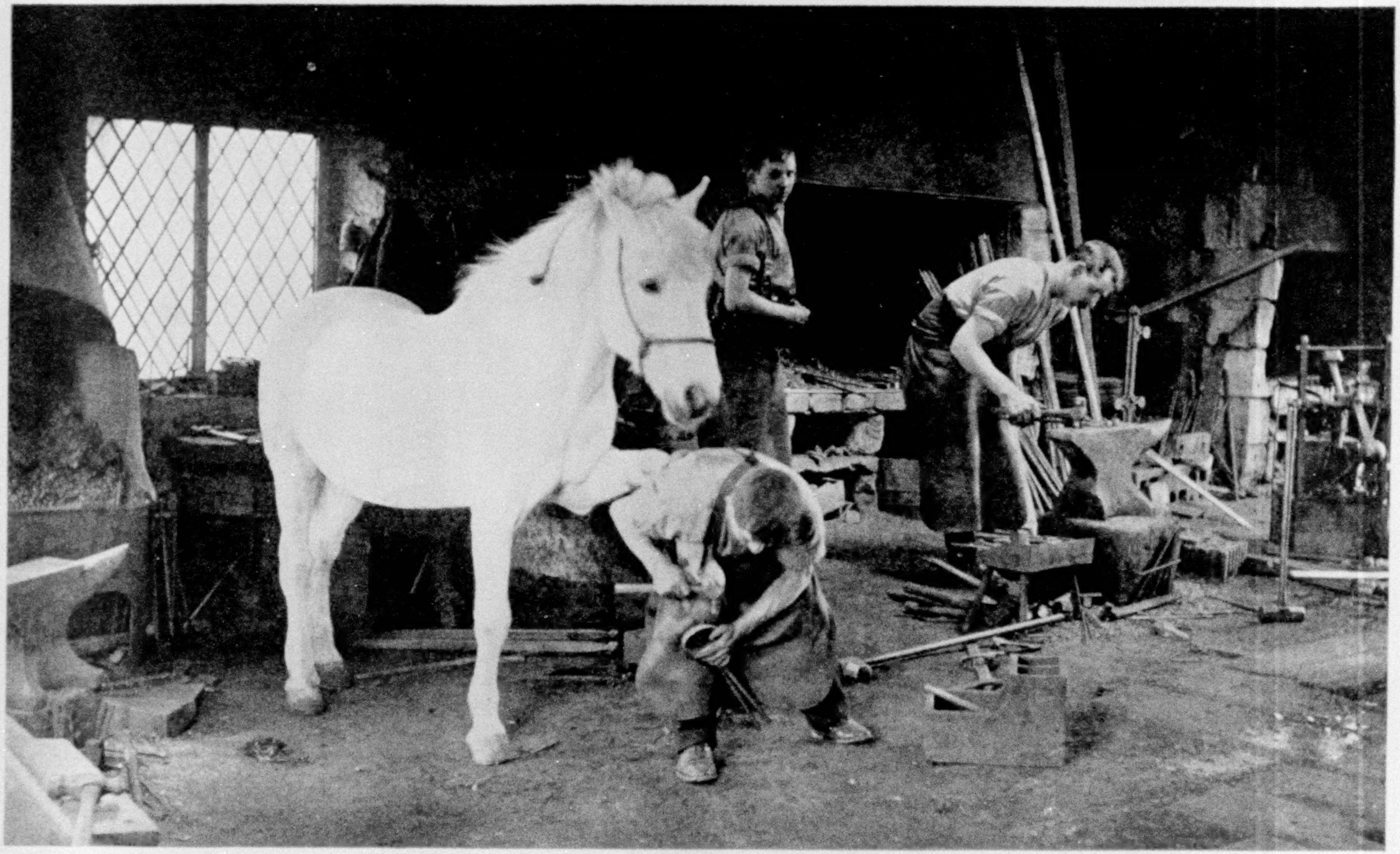
It may be remarked that gaited saddle horses have retained their popularity in America wherever riders know how to ride them, for the changes of gaits are all made by the horse upon signal or indication from the rider.

Many fine saddlers have been condemned by purchasers because they had no knowledge of riding a five-gaited horse. It was the Virginia horse that formed the basis of the stock of Kentucky, Tennessee, and other Southern States.

### PENNSYLVANIA DEVELOPED THE BIG DRAFT HORSE

The horse industry of Maryland followed closely upon that of Virginia and other Southern colonies, but in Pennsylvania there was a complete change of system upon the coming of William Penn to assume direction of the grant which had been conferred upon him by Charles II.

Beginning in 1676, all horses running at large were required to be branded, and within a few years it was enacted that no stallions under 13 hands should be allowed on the ranges. This law was revised in 1724 and the size increased to 14 hands, all horses found on the public range below that height being altered.



Photograph by Charles Reid

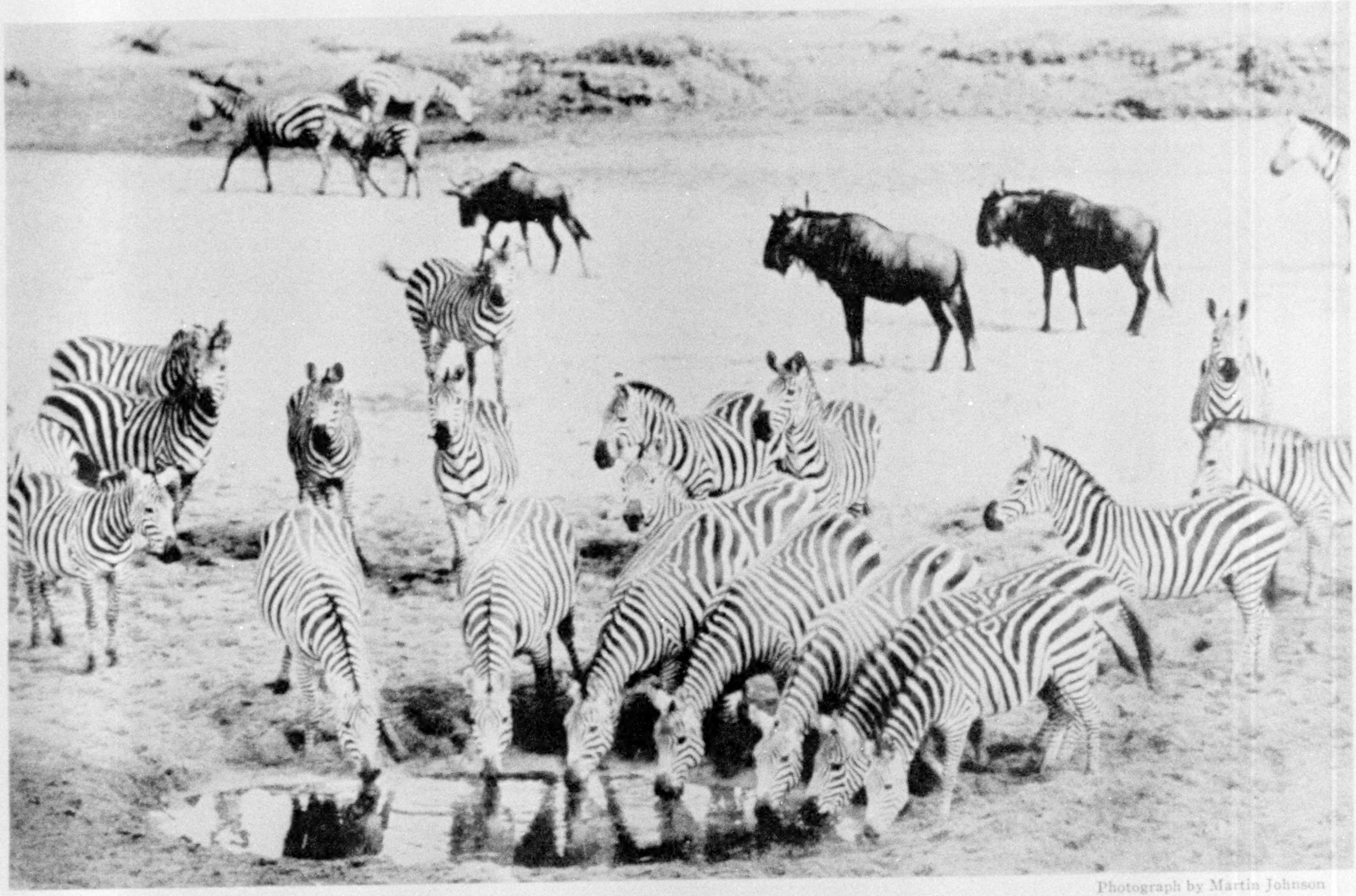
SUCH A SCENE AS LANDSEER LOVED AND PAINTED

The open door of a smithy always has its lure, and every man who owns a horse, sooner or later develops his ideas as to how his favorite should be shod. The one who knows a good blacksmith is fortunate, for there is no truer saying than the old English adage, "No foot, no horse."

Photograph by William Reid

FOUR WILLING WORKERS—CLYDESDALES

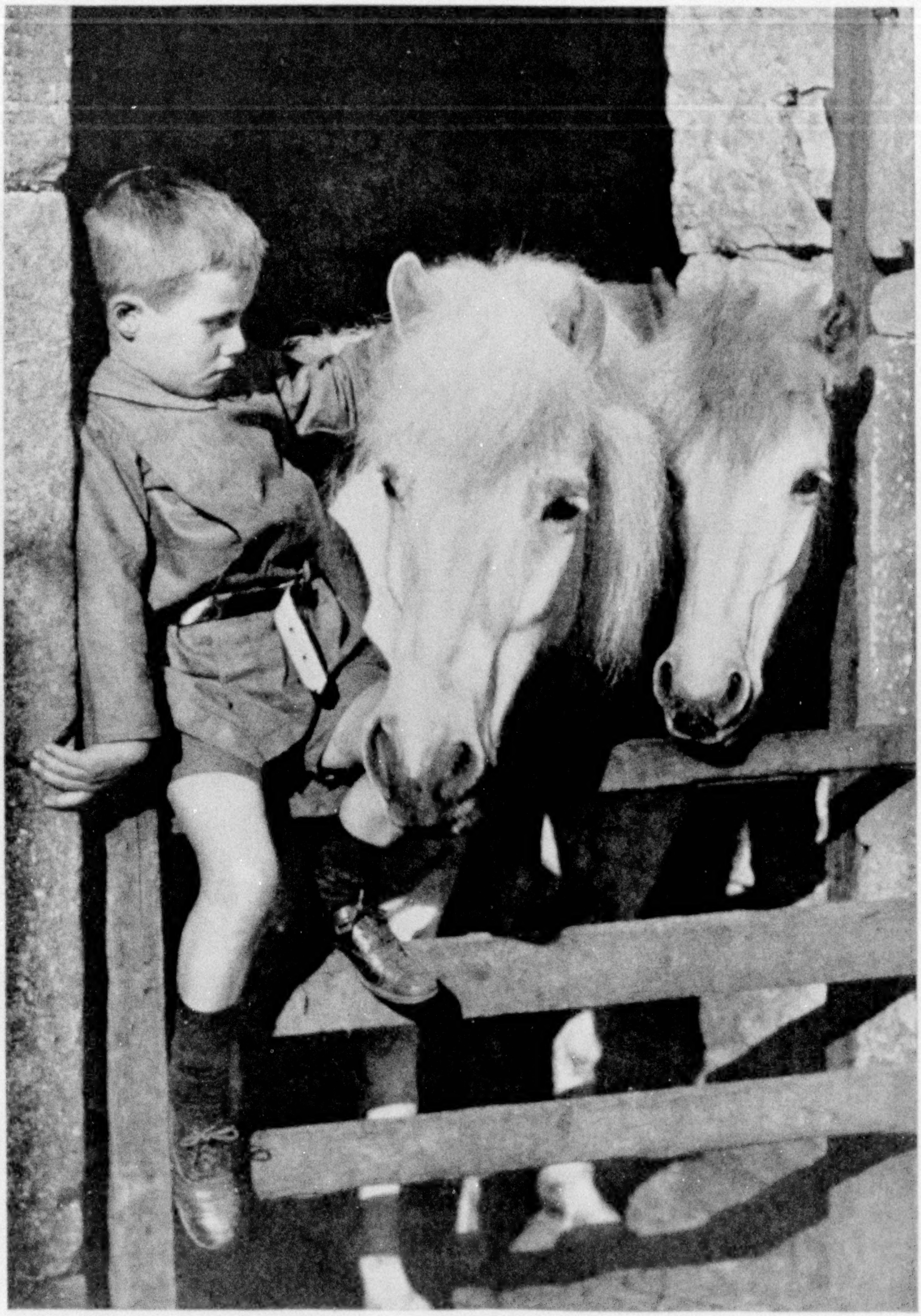
America has never developed a heavy horse of its own. The Scottish Clydesdale has been imported, but is not so popular in the States as it is among our northern neighbors, the Canadian farmers. By means of a recently invented horse and mule dynamometer, it has been determined that some horses develop from 8.6 to 21.2 "horse-power," and exert a tractive pull of from 2,000 to 2,300 pounds.



Photograph by Martin Johnson

THE CLYDESDALE AND THE ZEBRA ARE BROTHERS UNDER THE HIDE (SEE TEXT, PAGE 560)

A herd of zebras and gnus photographed in their native haunt in the heart of Africa. The gnu is an animal with the head of an ox, the body and flowing tail of a horse, and the limbs of an antelope.



Photograph by William Reid

THREE FRIENDS

With abundance of nourishing food and protection from inclement weather, the horse of any breed will quickly respond and in a few generations, by careful selection, will bear little resemblance to its early progenitors.

The Pennsylvanians took life more seriously than their Southern neighbors, and at an early date horse racing of all kinds was prohibited under severe penalties.

The whole scheme of the Pennsylvanians, so far as the horse industry was concerned, was to encourage and develop a large type of horse, capable of farm work and of hauling heavy loads to tidewater in the earlier years, and later over the mountains to the head of navigation on the Ohio, whence goods were delivered to the growing settlements as far south as New Orleans by water.

Among the early settlers of Pennsylvania were Swedes, Finns, and Dutch, who brought with them many small riding horses, mainly pacers. During the pioneer period they, like all the first immigrants, relied upon saddle horses to get about the new country, long devoid of roads.

When they had once obtained a foothold, they became the recognized sturdy, plodding, small farmers of the colonies, and it was not long before their horses began to improve, as the appearance and fertility of their farms had done.

In the course of time, when the settlements west of Fort Pitt had created a trade with Philadelphia, the results of the encouragement long given to horse-breeding became evident.

Pack trains can go almost anywhere, but they have always been an expensive form of transportation and one limited in the character of goods which can be carried. The large horses of Pennsylvania were now harnessed to enormous wagons and laid the foundation of the overmountain traffic which connected with flatboats and barges for delivery of freight along the Ohio, Cumberland, Tennessee, and Mississippi Rivers.

While not creating a new species, they at least gave a name—Conestoga—to both horses and wagons, which made known the wagoners of the Alleghenies in song and story, until the railroads came to displace them and send them to that oblivion which seems to be the fate of all things which run counter to mechanical inventions in an age of industrialism (see illustration, page 475).

In New York and New England there were English horses, used mainly for saddle purposes, but the early Dutch settlers along the Hudson obtained their work horses from the Netherlands. One of the first things done by the British governor of New York, following the surrender of New Amsterdam, was to establish a race track on Long Island, and there has never been a time since when one or more tracks were not in existence there.

Facilities for water-borne communication and commerce have always had a tendency to retard the development of the horse. However, as settlers filled up the interior of New York and overflowed into the Western Reserve, the character of the horses began to change.

### FAMOUS FAMILIES OF HORSES FROM NEW YORK AND NEW ENGLAND

While New York and New England have never been regarded as horse-raising districts, some wonderful families, notably the Morgans, the American Trotter, and the Narragansett pacers, had their origin and main development there.

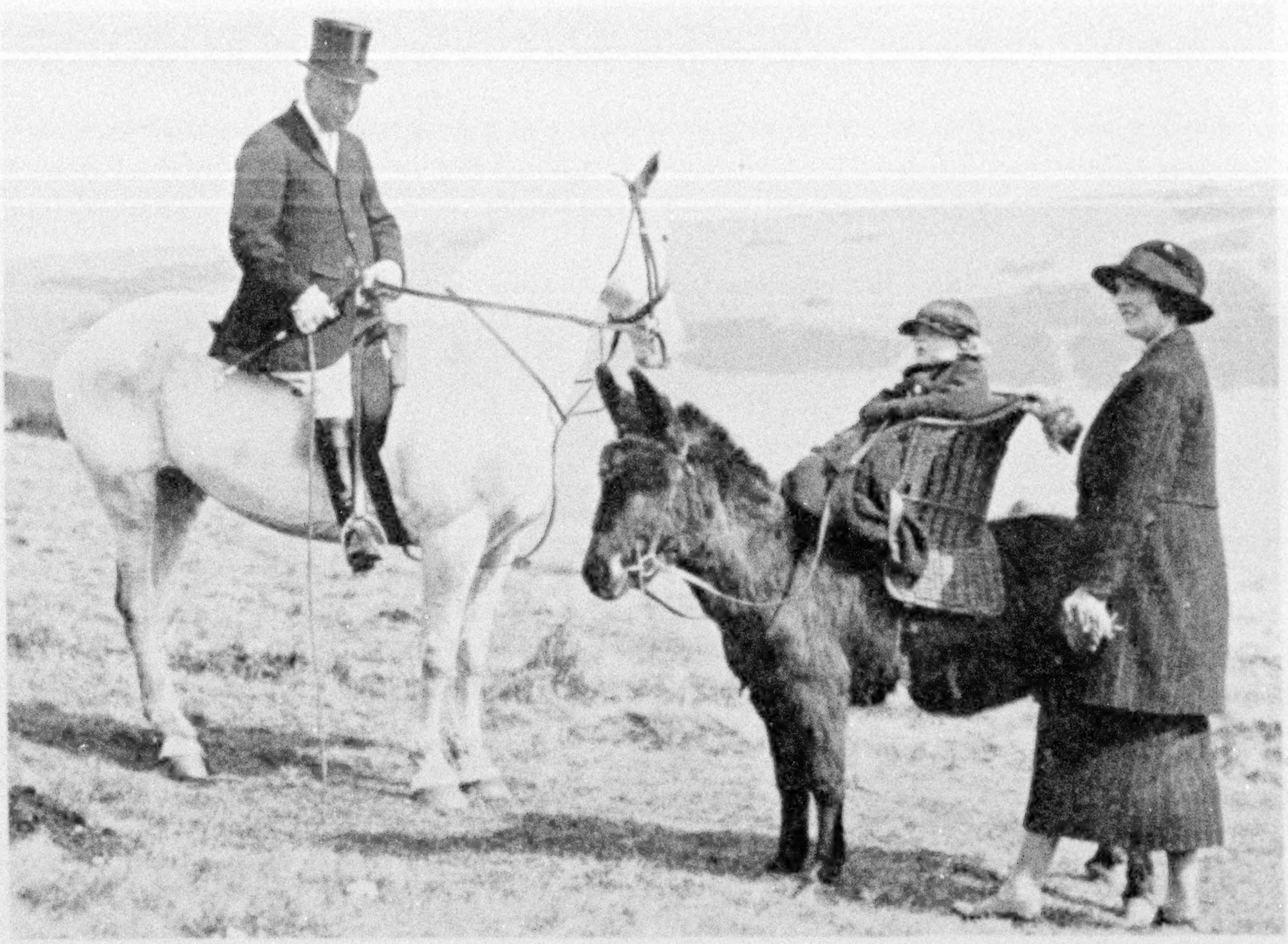
Certain small districts are the homes of some very important breeding ventures, but references here concern the more general phases of the horse of America.

With the exception of the horses introduced by the Spaniards, mainly in the far West, it is fair to assume that nearly all the horses brought into the colonies prior to the Revolution came from the British Isles. As a class, they were small horses, very few of the earlier importations exceeding 13½ hands.

It does not require much research to find the reason for the prevalence of so many pacers in the colonies. The British Isles were invaded by the Romans half a century before the Christian Era.

During the first century the islands were permanently occupied and continued as a Roman province until the middle of the fifth century, when the garrisons were withdrawn to the Continent to resist the invasion of the Huns.

During this long occupancy many roads were constructed and there was an abundance of horses. The saddle gait most prized at that period, and for more than a thousand years afterwards, was the pace, or the amble.



Photograph from Edwin Levick

WHEN THE FOX HORN SOUNDS, YOUNG AND OLD ASSEMBLE

This young man of Sussex, England, mounted on his shaggy steed, has attended fox meets strapped in his hunting saddle-chair since he was a year old. The white horse has apparently turned away in disgust at the novel arrangement.

Soon after the American colonies were established along the Atlantic seaboard the pace was decreed unfashionable in England, but that fact did not immediately eliminate or stop the importation of pacers, nor prevent the transmission by imitation of that gait to descendants even to the present time.

The distinct breed of Saddle Horse, the many-gaited animal, resulted from crosses on pacing stock, and before the advent of cheap automobiles they were found on nearly all Southern farms.

THE TRAIL OF THE HORSE THIEF

The American pioneers and their descendants have always loved horses. In fact, many of them, in early days when settlements were few and far between, exhibited such admiration for other people's horses that stringent laws were enacted in the older States to prevent unauthorized change of ownership, and anti-horse thief associations and vigilance committees existed in all parts of the country to relieve the courts of trouble.

Many years later organized bands of horse thieves maintained a flourishing business along the Mexican border in Arizona by stealing alternately from each side. They did not limit their selections to private animals, but ran off stock from government herds.

On one occasion angry cattlemen trailed them and captured one near the post at which the writer was serving, in New Mexico. The thief was brought to the trader's store in the fort to wait for absent members of the posse to come in. After some delay the cattlemen assembled and then decided that it was useless to ride ten miles to the nearest jail, and got ready to hang the culprit to a government telegraph pole. It required a show of military force to persuade them to move with their prisoner off the military reservation.

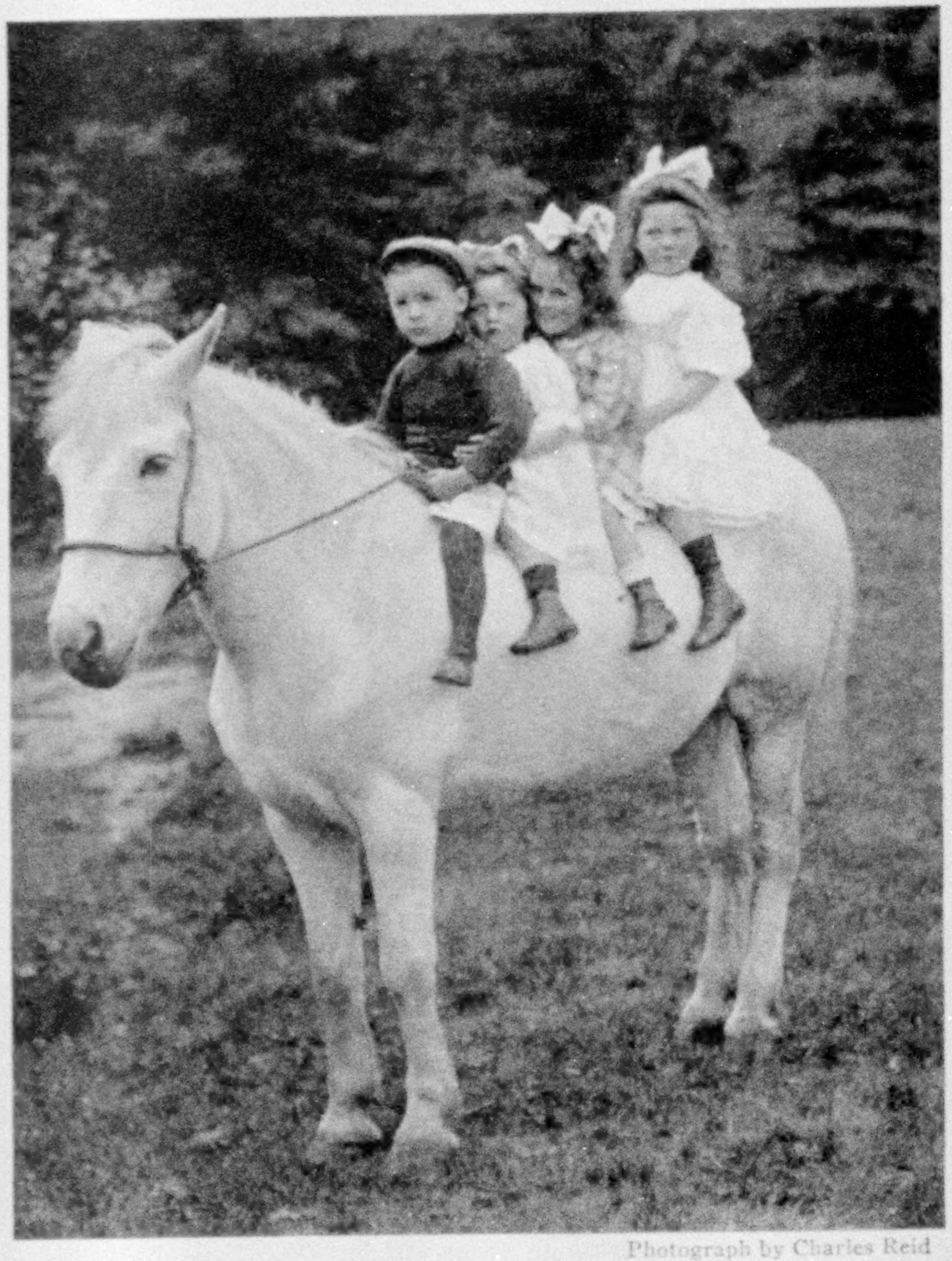
It took four years to raise a horse,

Photograph by P. O. Bugge

AMERICAN TOURISTS IN SCANDINAVIA EMPLOY THE STURDY NORWEGIAN DUN IN SIGHT-SEEING

AN ICELAND PEASANT ON HIS FAVORITE HORSE

In an island where there are practically no railroads, no canals or navigable rivers, and no motor highways, horses constitute a large part of the wealth of the farmers.



Photograph by Charles Reid

DOCILITY: FULLBACK ON A SCOTCH FARM

Photograph by C. R. Miller

DYNAMICS: A "BRONCO-BUSTER" IN ACTION

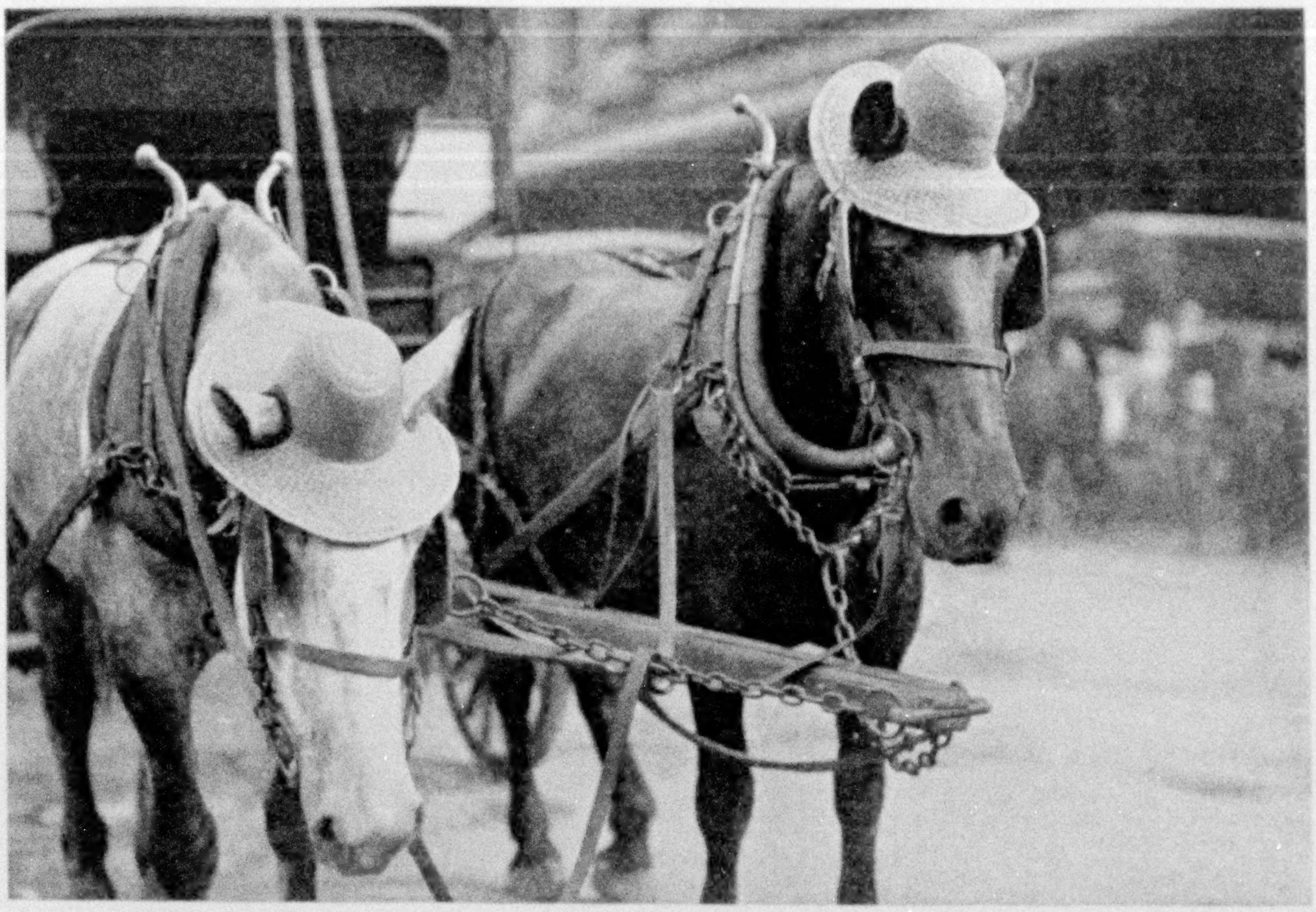
Photograph by Charles Martin

THE ARTILLERY GROUP OF THE MONUMENT TO GENERAL ULYSSES S. GRANT AT THE HEAD OF THE MALL IN WASHINGTON, D. C.

On the north and south pedestals of the great marble superstructure are two spirited groups in bronze representing the Cavalry and the Artillery, as if in a mad rush toward the center. The horses in the groups are wonderfully modeled. Henry Merwin Shrady, the sculptor, himself a horseman of skill, spent 15 years upon the work and died just two weeks before the great monument was dedicated. On the lofty central pedestal Grant, in his familiar slouch hat and Army cloak of the Civil War campaign, sits upon a horse modeled after one the General actually rode.

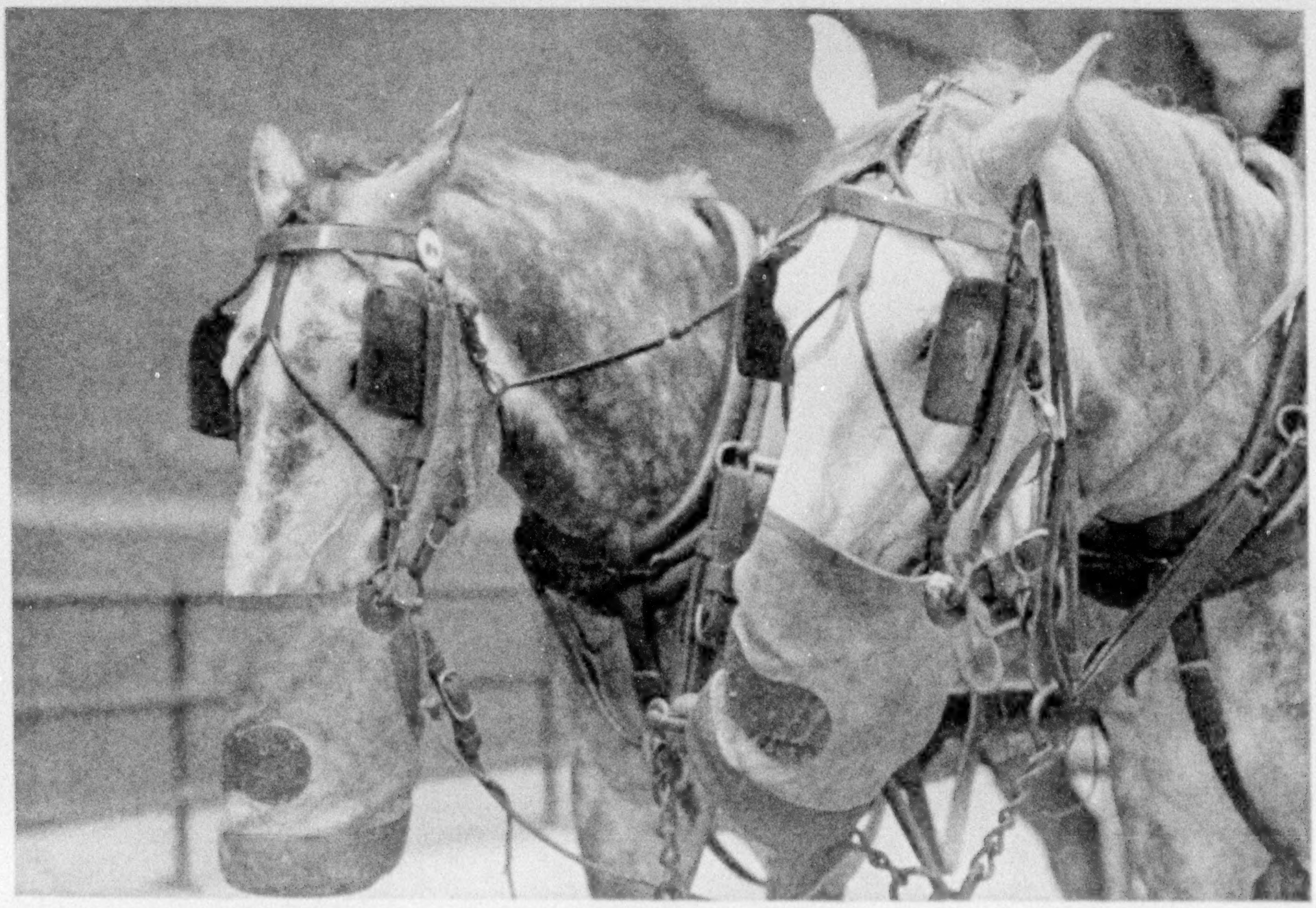


XUM



HORSE MILLINERY

Both manicure and millinery are modern requirements of the workaday horse.



Photographs by Brown Brothers

A MIDDAY MEAL FOR WORKING HORSES

Societies for the prevention of cruelty to animals have long objected to these feeding bags. The dust and spelts are inhaled into the horse's lungs. In European cities one will see the cab drivers leave them about the horses' necks for hours.

Photograph from The Pendleton Round-Up

RIDING A BRONCO

Breeders of good horses have, as a general rule, given up the rough methods of breaking animals practiced during early days in the West, and are exercising more kindliness and intelligence in their training.

while four days were usually sufficient to take one across the border line beyond recovery.

Some day automobile thieves may be given equally short shrift, when that form of stealing will become as rare as horse stealing became in the days of the Vigilantes.

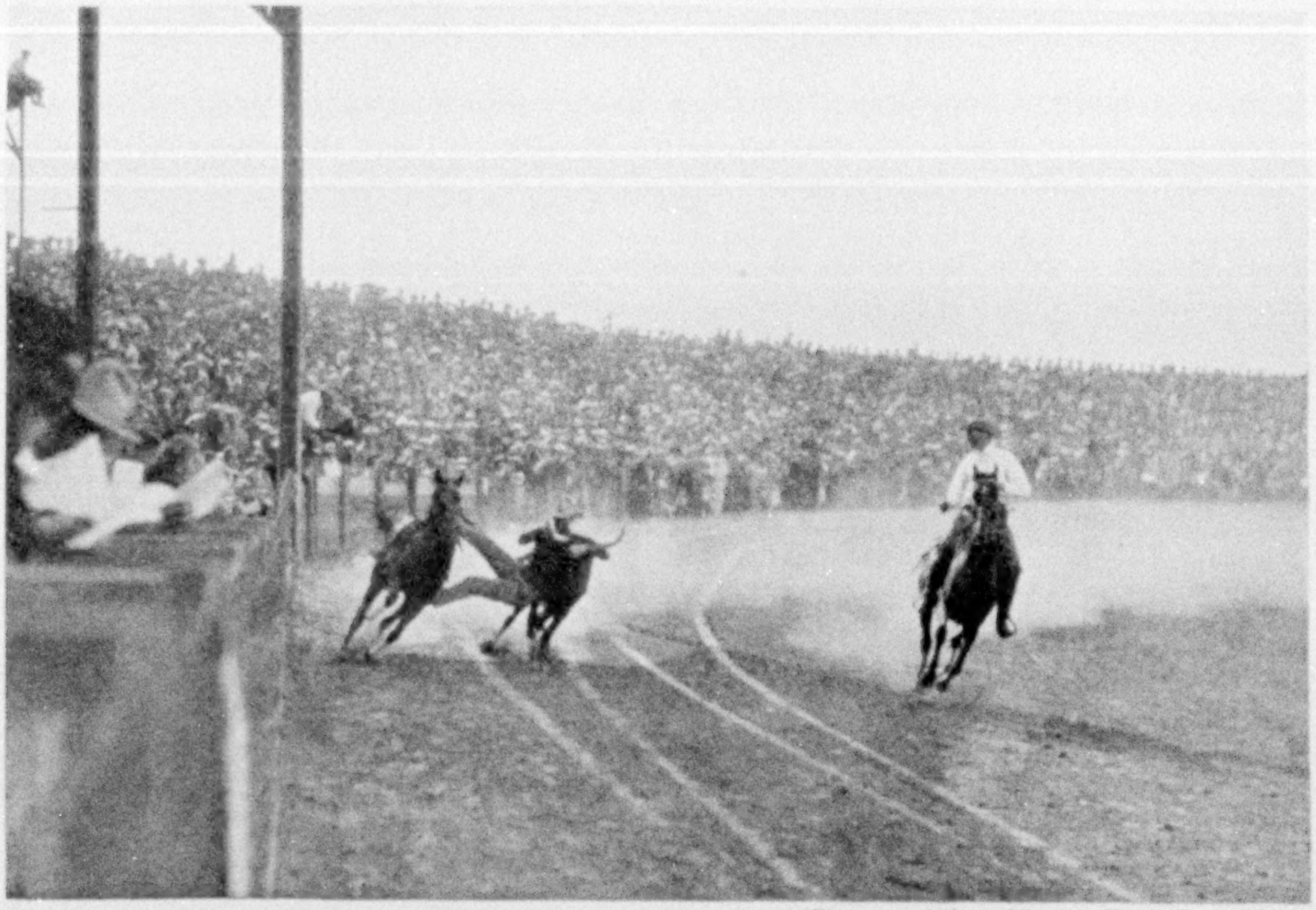
### BREEDING STANDARDS

Utility is the test ordinarily applied in life, and when the old has ceased to measure up to the modern demand, it has always had to give way to improved methods. This principle has been applied unrelentingly to farm animals, including horses of all classes.

Having discovered, for instance, the combination in mating which produced speed for racing, the breed was confirmed in name and place, as the Thoroughbred, by persistent rejection of the unsuccessful and breeding only those that had consistently shown the speed and staying qualities to win.

Similarly, when breeding for size and strength, it was essential to select with care the big horses that were reliable in transmitting the qualities sought, which included equable temperament, nervousness always counting against the acquisition and retention of flesh, so essential in the draft horse.

At the opposite extreme is found the



Photograph from The Pendleton Round-Up

A DARING BIT OF HORSEMANSHIP

Plunging from a galloping mount to the neck of a madly fleeing steer, the cattleman throws his animal and ties it. The feat is known in frontier parlance as "bulldogging." Buffalo Bill astonished England when he took his bucking broncos to that country, and it was only the utter failure of experienced horsemen to stay in the saddle that convinced the Britishers that the animals were not merely trick horses spoiled in the training.

pony, suitable for children, where diminutive size is the main consideration—a condition often defeated by the persistent inclination of all types of horses to increase in size in an environment characterized by abundance of rich food.

The immensity of our country and the diversity of its climate and agricultural resources have made possible the introduction of many breeds of horses to replace those discarded or to meet new and hitherto unfilled demands.

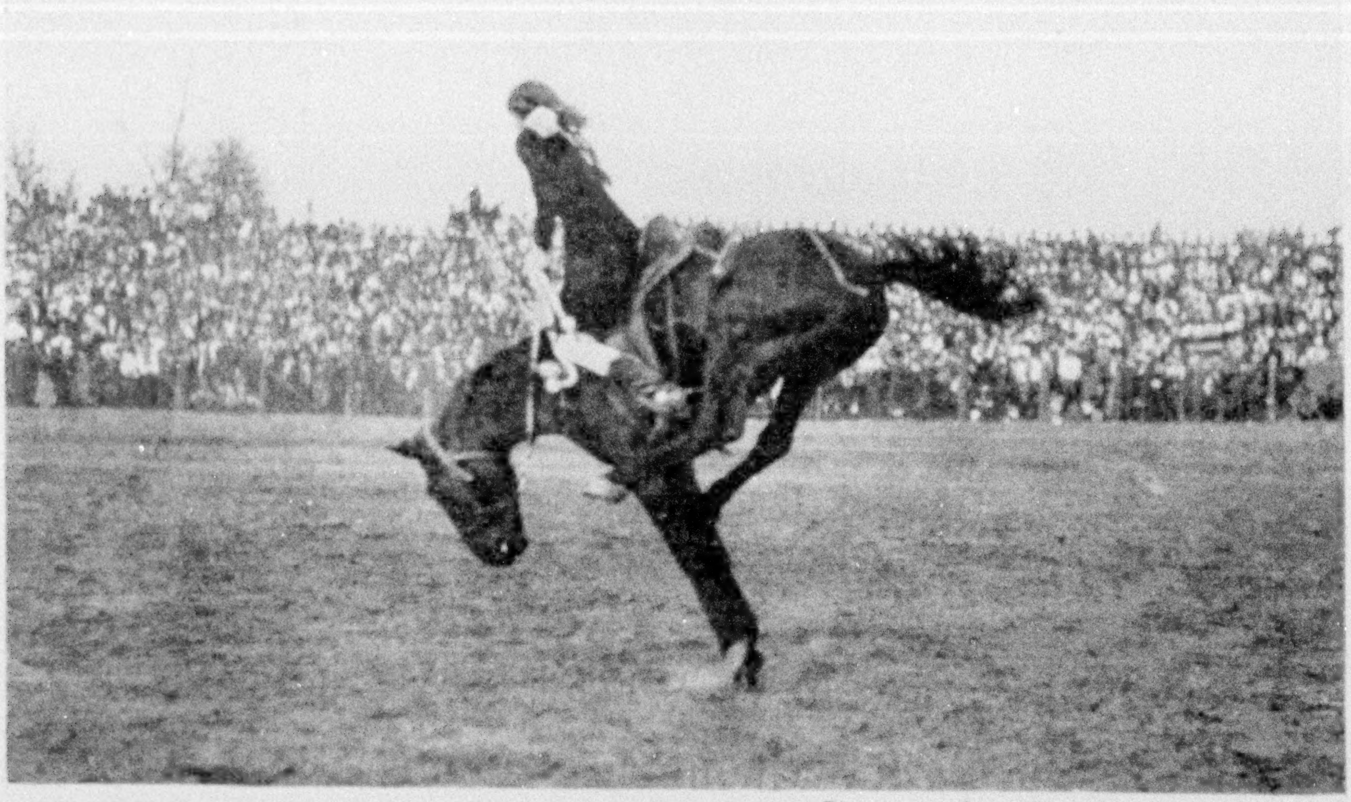
The utilization of farm machinery has given a very general impression that the horse is no longer necessary, and that the breeding industry has gone into a permanent decline.

When there were unlimited range and cheap forage, large numbers of inferior horses were kept. With increasing land values and curtailment of open ranges, the scrub is making way for something more profitable. There are altogether too many inferior horses still occupying stalls on American farms, but the increase in numbers of improved breeds constantly serves as a lesson to those who still waste feed on animals not up to the most profitable standard.

Farming has not been as profitable since the World War as it should have been. The cost of farm labor has been extraordinarily high, and whenever a farmer feels the need of cutting down labor and expense, almost the first idea which suggests itself is to sell surplus stock. This has been done, and there are indications now that the low-water mark has been reached, and that breeding of horses will increase again in the near future.

THE PERCHERON IS THE MOST POPULAR DRAFT HORSE IN AMERICA

For many years American breeders have ventured into the field of heavy draft horses, and experience obtained seems to have led to a general trend toward the Percheron as the best suited of the heavy horses for America. The numbers of the several breeds of imported



Photograph from The Pendleton Round-Up

"PRAIRIE ROSE" HENDERSON RIDING "BRANDY"

It is remarkable that while most of the horses of the North and South American continents in modern times are descendants of the animals introduced by the Spaniards, the development of the prehistoric horse has been traced almost wholly from fossil remains found in this hemisphere (see illustration, page 458).

draft horses reported in the United States on January 1, 1920, were 70,613 Percherons, 10,838 Belgians, 5,617 Shires, 4,248 Clydesdales, and 2,964 French drafts.

Preference in such a matter is not a mere whim of fashion. There must be practical advantages in the form, action, and general qualities of the Percherons, or they would not exceed all other breeds by more than two to one. Possibly climate has something to do with it, for the extreme variations of temperature in winter, causing alternate freezing and thawing, with attending slush, are decidedly unfavorable to animals with heavy growths of hair about the lower legs, as is the case with the Shires.

It is not uncommon to see American-bred Percherons weighing upward of a ton each at two and three years of age. Their carriage is attractive, and their legs are clean, with generally fine feet. Altogether, they make a most satisfactory, handsome, and useful draft animal.

Like most fat animals, they are not consistent breeders, but their number is steadily increasing, and their crosses on native mares, of good frame and suitable conformation, supply a middle-weight draft horse for which there is always a steady demand. To date, the truck and the automobile have not been able to supplant this type in his chosen field.

The small automobile has lessened the demand for light horses, formerly used on farms for saddle and light buggy combination horses, but the rising cost of gasoline and repairs, together with the comparatively short life of the car, may eventually restore the combination saddle and driving horse for local use, reserving the car for urgent or distant travel.

REMOUNT BREEDING

The preservation and increase of this type of horse play prominent parts in all plans for national defense, but unhappily, after every war, those who proclaim the millennium and fly in the face of current events and of our own history are

Photograph by William Reid

DONALD, DOG, AND DONKEYS AT THE SEASHORE IN SCOTLAND

To children the donkeys are one of the chief attractions at Portobello, near Edinburgh.

welcomed, while those who urge, as of old, that we keep our powder dry are denounced as militarists.

In the face of many obstacles and discouragements, the military authorities have gone steadily forward during the past 20 years in standardized and continuous efforts to keep alive and expand the breeding industry, in so far as it relates to horses suitable for military service and for which there has been a diminished commercial demand.

The road of progress has been long and rough, and without the voluntary assistance of men of vision in civil life success might have been turned into failure many times. Through contributions and by purchase from very limited appropriations, the Army Remount Bureau has been enabled to distribute throughout the country stallions of suitable type to breed remounts for the Army.

The very small price allowed for the purchase of horses has caused an abandonment of the usual preferred option on colts. Breeders who develop occasional high-grade animals are thereby enabled to sell them at such profit as to help out in the case of misfits.

While at peace, the Army does not have to purchase heavily, but the system has to be maintained for the day of need. The training and experience obtained by officers and their assistants in carrying on the remount administration are worth to the Government each year more than the entire cost of the system from the beginning.

The types of horses bred under the encouragement of the Remount Bureau are not restricted to any particular breed, but preference is shown for the Thoroughbred cross on selected mares.

More Thoroughbred stallions are distributed to breeding areas than all other types combined, but this is in accordance with the expressed wishes of agents. Arabian, Saddle Bred, Morgan, and Standard Bred stallions are made available for those who desire those crosses.

In order to make public the relative merits of the different breeds, endurance rides have been established, where the choicest horses of each type may meet and establish their claims to superiority.

Photograph from U. S. Signal Corps

GASSED AND SHELL-SHOCKED

A Missouri mule of the American Expeditionary Forces in France being led to a dressing station behind the lines near Vaux.

Horses of unknown breeding are not eligible for entry.

Such tests cannot be applied with all the elements necessary to a positive determination as to which breed is best for a particular purpose, but they do show that all the horses entered are superior to ordinary animals devoid of good blood.

To establish relative values, it would be necessary to enter the same number of animals of each type in the race. So far as public interests are concerned, this would settle nothing beyond the relative merits of individual horses.

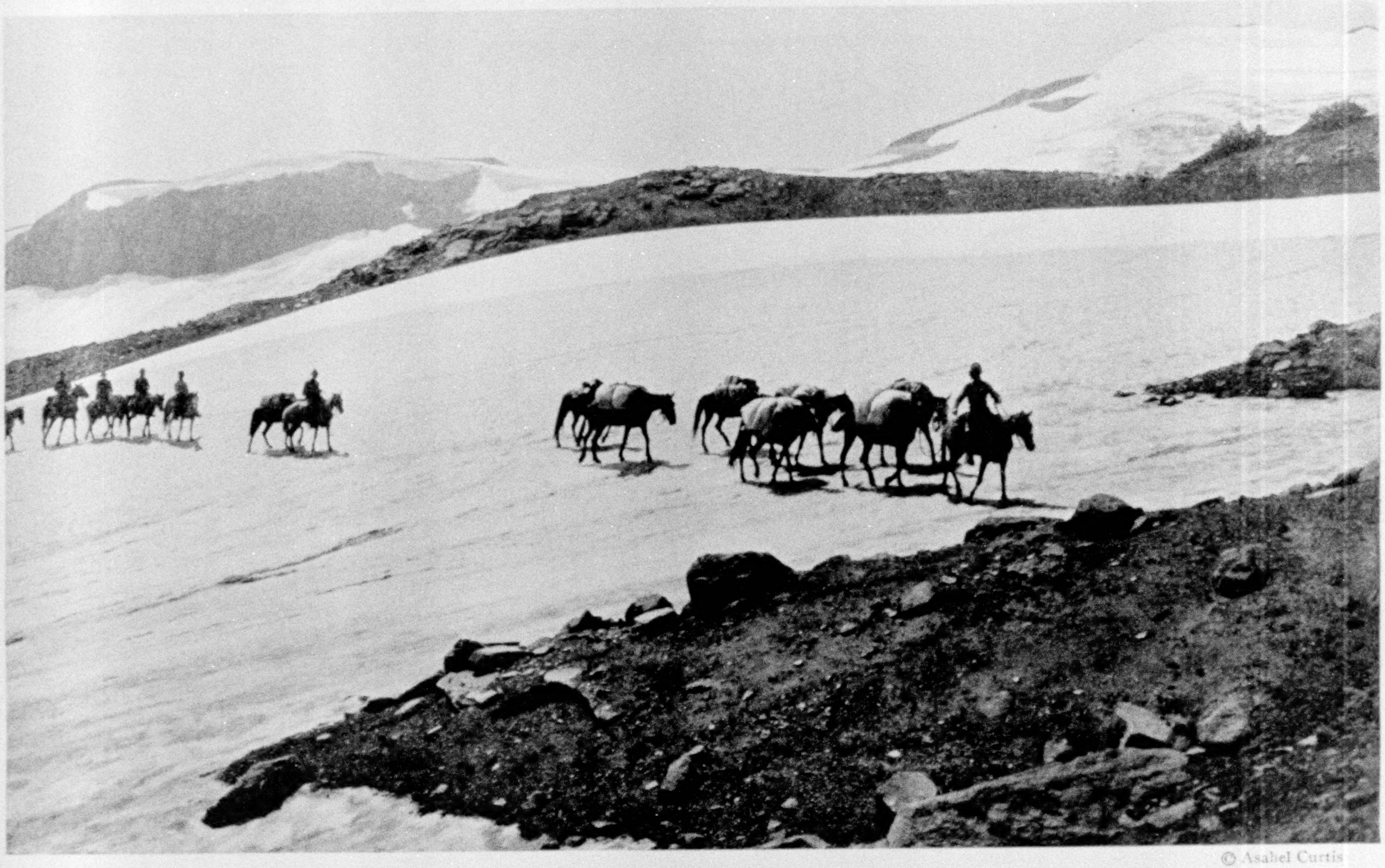
To establish an order of merit as a basis for army purchases, there should be foundation stock of each type in equal numbers in the country. That condition can never be made possible. The tests to date have established the Arabian horse, both the pure and part bloods, in high esteem; yet the total number of Arabians in America is insignificant as compared with the needs of an army in war times.

Similarly the Morgan (see page 516), a real American horse, has reëstablished his old reputation for gameness and stamina; yet the total number in America is too small to rely upon even for a serious impress as sires.

© Herbert G. Ponting

A MULE MARKET

According to the U. S. Department of Agriculture, "the ability of the mule to endure hardship and perform sterling service under adverse conditions has established him as a real asset in American agriculture. In 1910 the number of mules on farms and ranches was 4,209,769. The number on January 1, 1920, was 5,432,391—an increase during the decade of nearly 30 per cent. Nearly three-fifths of all the mules in the United States are found in the nine cotton-belt States of the South."



© Asahel Curtis

CROSSING THE SNOW FIELDS TO PANHANDLE GAP, MOUNT RAINIER NATIONAL PARK

It would be almost impossible to make the trip through the snow fields and glaciers of majestic Mount Rainier, whose summit is a glistening beacon to many a mariner far out at sea, without the patient horse, which carries food and other provisions to camp sites on the heights.

Photograph by Charles Martin

THE MUCH-MALIGNED STATUE OF GENERAL ANDREW JACKSON IN LAFAYETTE SQUARE, FACING THE WHITE HOUSE, WASHINGTON

The sculptor has depicted the spirited mount of the Hero of the Battle of New Orleans at the moment when the guns are first heard (see text, page 566).

The Thoroughbred is the only one of the breeds having representatives in the tests that exists in numbers sufficient to make a creditable showing within a reasonable number of years. The same conditions exist with the Saddle Bred and American trotting horses as in the case of the Arabian and Morgan, though not quite to the same extent.

NOT NECESSARY FOR THE GOVERNMENT TO BREED CAVALRY HORSES

More than a quarter of a century ago the author was called upon to prepare a textbook on the horse for the use of the Army, and after maturely considering the question of breeding remounts, wrote:

"It is safe to conclude that the horses required for public service will continue to be purchased from private breeding farms. With so unlimited an agricultural country, there should never be any lack of suitable horses of any class for which there is an active demand at fair prices.

"It is not necessary for the Government to breed horses for cavalry purposes. Equally as good, if not better, results may be obtained by training a large number of officers to the duty of inspecting and

selecting the best animals produced on American farms and buying them from breeders whenever possible."

The horse, if selected with care and properly used, is capable of rendering long and valuable service. The merest lout who can ride fairly light may take a horse over an immense distance in a single ride; but he will in all probability expend the entire vital force of the animal and leave him a broken-down, spiritless wreck at the end of his journey.

HORSE CASUALTIES IN WAR

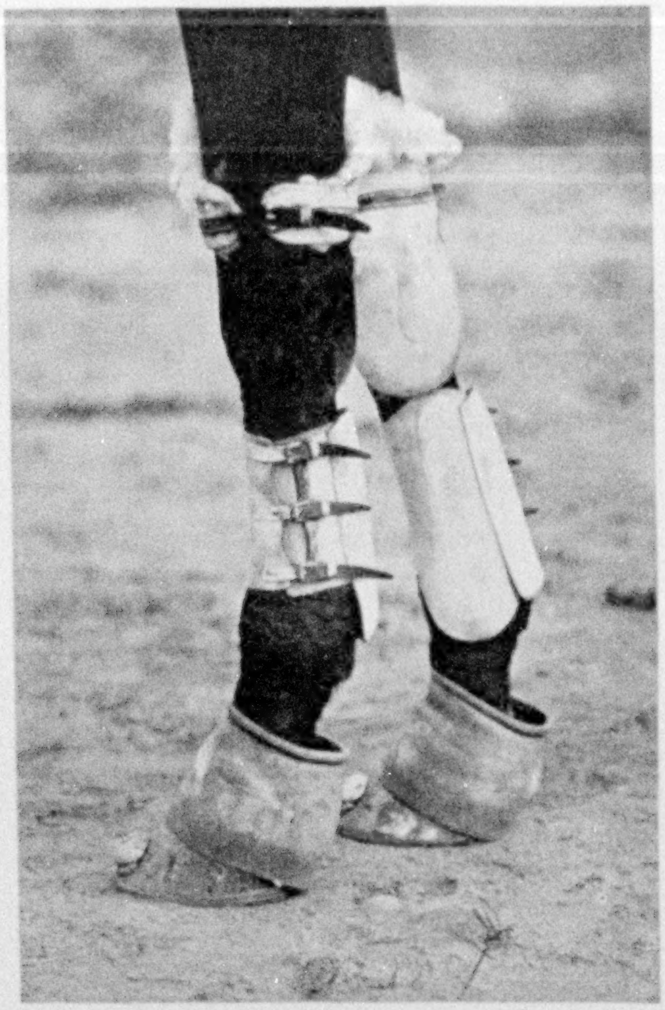
There is an infinite amount of hardship and drudgery connected with the mounted services, and the loss of animals in all wars is very great. During the Civil War, in 1864, the Federal Army required more than 500 horses each day to replace losses. During the first eight months of 1864 the cavalry of the Army of the Potomac used up 40,000 horses—an average of two remounts to each man.

Similar conditions have prevailed in other armies. During the Russian campaign, 1812, Napoleon crossed the Niemen with 187,121 horses, of which 60,000 belonged to the cavalry. Ten thousand died between the Niemen and Vilna because of bad roads and lack of food, and 92,000 had succumbed before the first fall of snow, mainly from starvation. Six months of such campaigning had practically destroyed the cavalry, which recrossed the Niemen with 1,600 horses.

During the retreat of the British to the seacoast at Coruña, in the Peninsular War, carried out in rain, sleet, and snow, the loss of horses was nearly complete, and the few that survived were shot on the beach to keep them from falling into the hands of the French.

When the French general Masséna marched out of Portugal during the same war, he started with 8,000 horses and lost 195 of them each day during the continuance of his retreat. Similarly, the losses in the Crimea in 1855, when the British and French operated together against the Russians, were very large, mainly due to starvation. Within a few months the number of British cavalry and artillery horses was reduced from 5,048 to 2,258.

As the history of nations goes, it is probable that the glory accruing from the "Charge of the Six Hundred" compensated the British for all their losses. The experience in the Crimea was a mere bagatelle to that in the Boer War, 1899-1902.



Photograph by Brown Brothers

BOOTED, SOCKED, AND KNICKERED

The elbow and ankle boots are worn to prevent abrasion from the metal shoes; the quarter boots around the hoofs prevent concussion when the feet come in contact with the pavement, and the toe-clips, screwed into the hoofs, make the animal extend itself when trotting or pacing.

The probability of a horse's reaching an advanced age does not depend as much upon race and breeding as upon his environment and care. Neglect, food insufficient in quantity and poor in quality, alike tend to shorten the duration of the horse's life. In this way one horse may be old and worn out at 12 or 14, while another may continue to render good service until 20 to 25 years of age. There are numerous instances to justify the statement that horses have lived to reach the age of 35 or 40 years.

It is very generally accepted as a fact that horses which mature slowly live longer than those which mature rapidly, provided, of course, they receive like

Photograph by Haas, New York

A PROUD PRODUCT FROM THE KENTUCKY BLUE-GRASS COUNTRY

year up to the sixth; hence there can rarely be any question as to the age of a horse, as indicated by the teeth, up to that time.

After the horse has obtained his full set of teeth, the age can be determined approximately by the effect of wear in altering their shape, by the receding gums, and by other signs. The teeth of a young horse come together in front at a very obtuse angle and appear to be almost perpendicular to the jaw in which set; those of an old horse, on the contrary, appear to be almost in the prolongation of the jaw.

The front teeth of a young horse are broad in the direction of the jaw, but as the teeth are worn off they gradually assume a circular shape on the top surface. Horses have tusks between the front and jaw teeth, but the mares seldom develop them.

treatment and are not put to hard service until fully grown.

It is usually claimed that mares live longer than horses, and small horses longer than large ones, but it is difficult to prove such statements, because all animals are not subjected to the same treatment.

### HOW TEETH SHOW A HORSE'S AGE

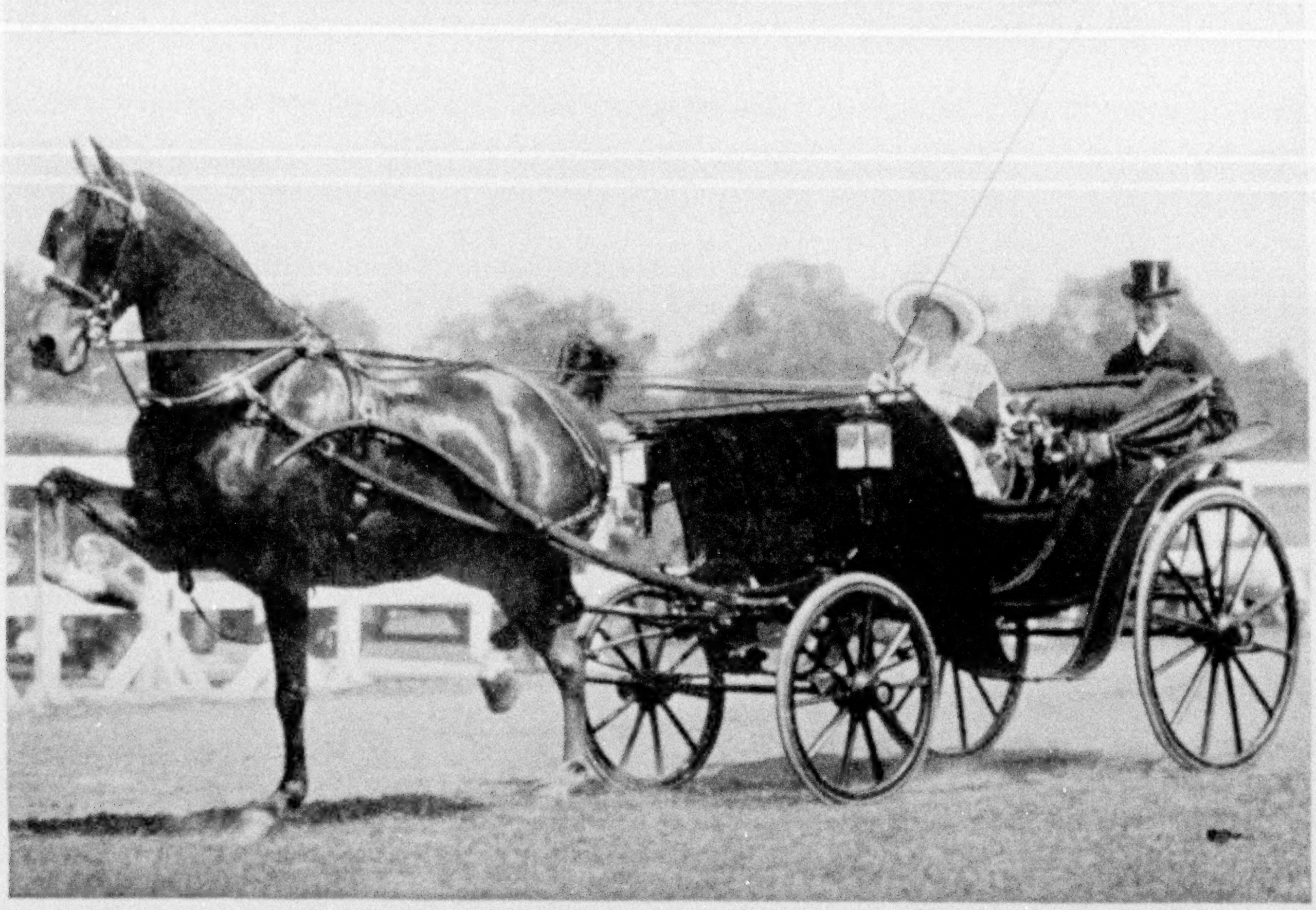
The difference in general appearance between young and old horses is very marked. It requires but little familiarity with horses to detect the extremes of age and the contrary condition.

After maturity, more reliance is placed upon the indications afforded by the teeth than upon outward signs. Structural alterations take place in the teeth every

The mule has long been appreciated in America and several other countries, but it has remained for recent years to expand its reputation to practically all parts of the world.

Mules have been bred and used in Europe from ancient times, especially in the mountain districts of southern France, Spain, and Italy and numerous islands belonging to those countries. They were not relegated entirely to mountain trails and farm drudgery, for they were favorite animals for use in royal carriages and as relays on the post roads before steam and motor transportation had become generally available.

Of course, the modern mania for speed sounded the passing of the slower mail coach, but there was a distinct loss to the



Photograph by Haas, New York

"TEMPTATION," A BLUE-RIBBON HACKNEY, IN ACTION

traveler, who sacrificed the intimate view of life obtained under the more sedate method of traveling, especially in a foreign land.

Very early in the history of New England a considerable trade was built up in the sale of horses in the West Indies. There followed a demand for mules, and many small animals of that breed were shipped from New England. It was not, however, until after the Revolution that the breeding of mules assumed large proportions.

In 1786 the King of Spain presented to General Washington a jack and jennet of the Andalusian breed, and later he received a Maltese jack from the Marquis de Lafayette. The jack, known as Royal Gift, presented by the King of Spain was unusually large (see text, page 525), but by crossing the Maltese jack on the Andalusian jennet, Washington became the possessor of a famous sire, which he named Compound.

COTTON GIN CAUSED INCREASE IN COTTON ACREAGE AND MULES

With the invention of the cotton gin, the planting of cotton increased by leaps and bounds, and similarly the development of sugar plantations reached proportions demanding large numbers of mules.

The land of cotton and sugar was not as well adapted to stock-raising as the blue-grass country to the north. In preparing to supply the demand for mules, it was necessary first to secure jacks.

The Spaniards had been raising small donkeys, or burros, in Mexico and the southwestern part of the country for many years, and had crossed the jacks on the Mustang mares; but the mule resulting from that breeding, while a useful little animal, was not of sufficient strength to do heavy agricultural work.

During the period when the States bordering the western flank of the Alleghenies and beyond, which turned out to be the best possible land for stock-raising, were being opened up and prepared for agricultural use, Europe was in the midst of wars and the sources of supply of jacks were not accessible.

Toward the end of Napoleon's career, America became involved in the War of 1812-15, so that for a long period Virginia remained in undisputed control of the mule market.

Photograph by Brown Brothers

CLEARING THE BARS AT SIX FEET FOUR INCHES

Before the introduction of steamships, the transportation of horses and other animals across the Atlantic was attended with many losses. Once the business became reasonably safe, men of vision were willing to invest in the highest grades of stock in Europe, and soon Americans were literally combing Italy, Spain, Malta, and France for the choicest of their jacks and jennets.

It was not long before the buyers discovered in La Vendée the famous jacks of Poitou, which have left such a deep impression upon American stock. The prices paid for many of these animals, including the pro rata distribution of losses in transit, were extremely high, but the salability of their progeny assured a safe and satisfactory return on the investment.

The development of the mule industry in Kentucky, Tennessee, Missouri, and other States, without flourish of trumpets, has been one of the outstanding successful ventures of the past century.

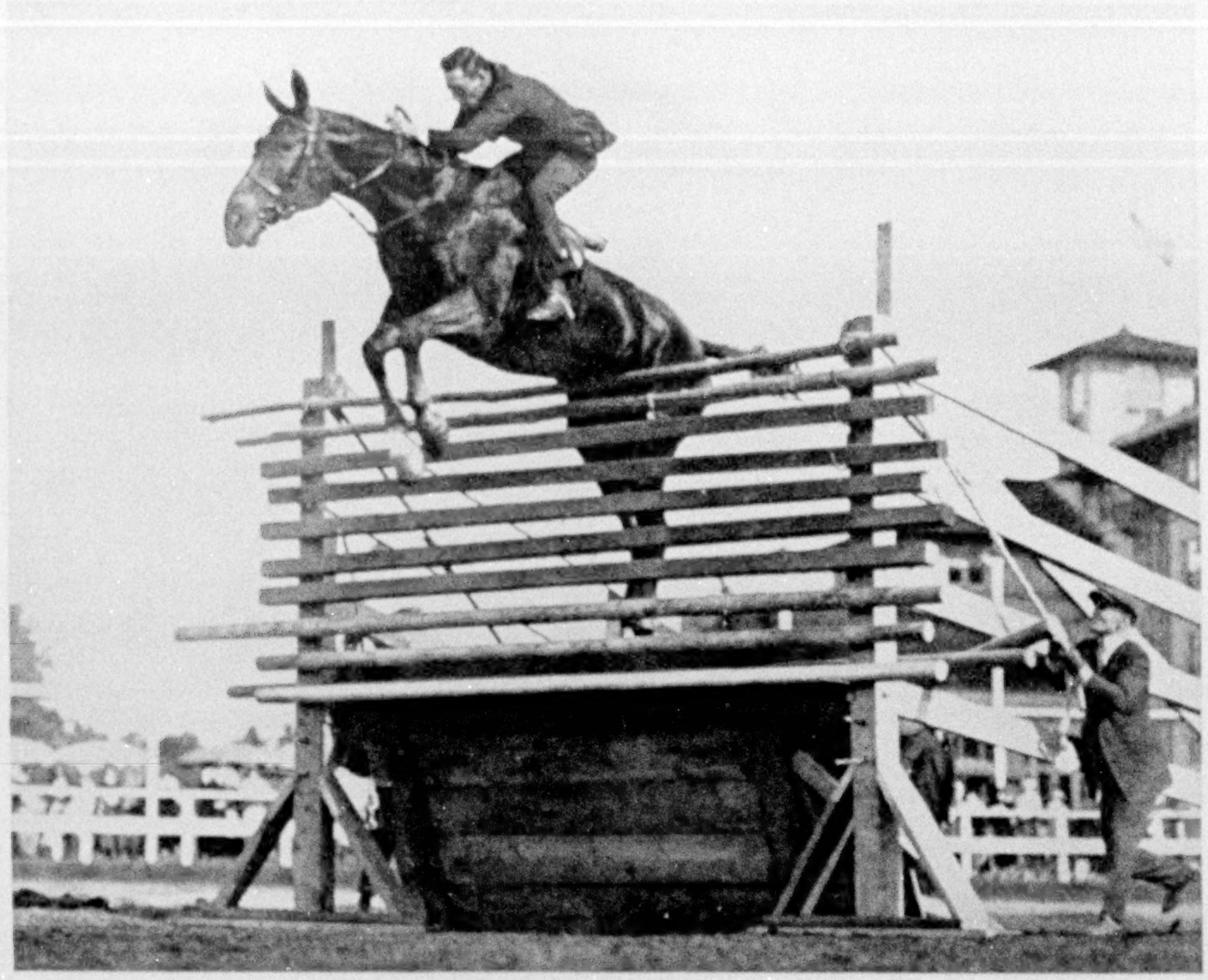
The number of mules in the country has steadily increased, and the last census showed a total of 5,810,641—a gain of considerably more than 2,000,000 in 20 years. These were bred almost wholly from native jacks, the importation of those animals having practically ceased. Nearly three-fifths of the mules in the country are in the nine so-called cotton-belt States.

The Civil War taught Americans the great value of the mule. There are no greater hardships than those incident to making war. The animals employed by the armies of the Union numbered one for every two men, and they hauled the heavy wagons over well-nigh bottomless roads during the whole four years' struggle. In fact, the war could not have been carried to a conclusion without the faithful army mule.

In the Boer War in South Africa the British turned to America for both horses and mules, but it was the latter that surprised the transport department by their ability to render good service under peculiarly trying conditions which killed off the horses like flies.

### THE MULE A DEPENDABLE ALLY ON THE INDIAN TRAIL

The American Army has long recognized the ability of the mule to do hard work on less forage than the horse, and



© Clyde Brown

"GREAT HEART," EIGHT-YEAR-OLD THOROUGHBRED, BREAKING A WORLD'S HIGH JUMP RECORD

This wonder of the horse world, on June 9, 1923, cleared the hurdles at 8 feet 13/16 inches at the South Shore Country Club Horse Show, Chicago. The old record of 8 feet ½ inch was set at Ottawa, Canada, by Confidence, which is said to have made an unofficial record of 8 feet 2 inches.

the official ration of grain has always been one-fourth less for mules than for horses. Perhaps the writer may be permitted some reference to personal experiences during many years of military service.

The army mule has often been credited with stubbornness, ill temper, a tendency to kick, and to give up more quickly than a horse when discouragement strikes him.

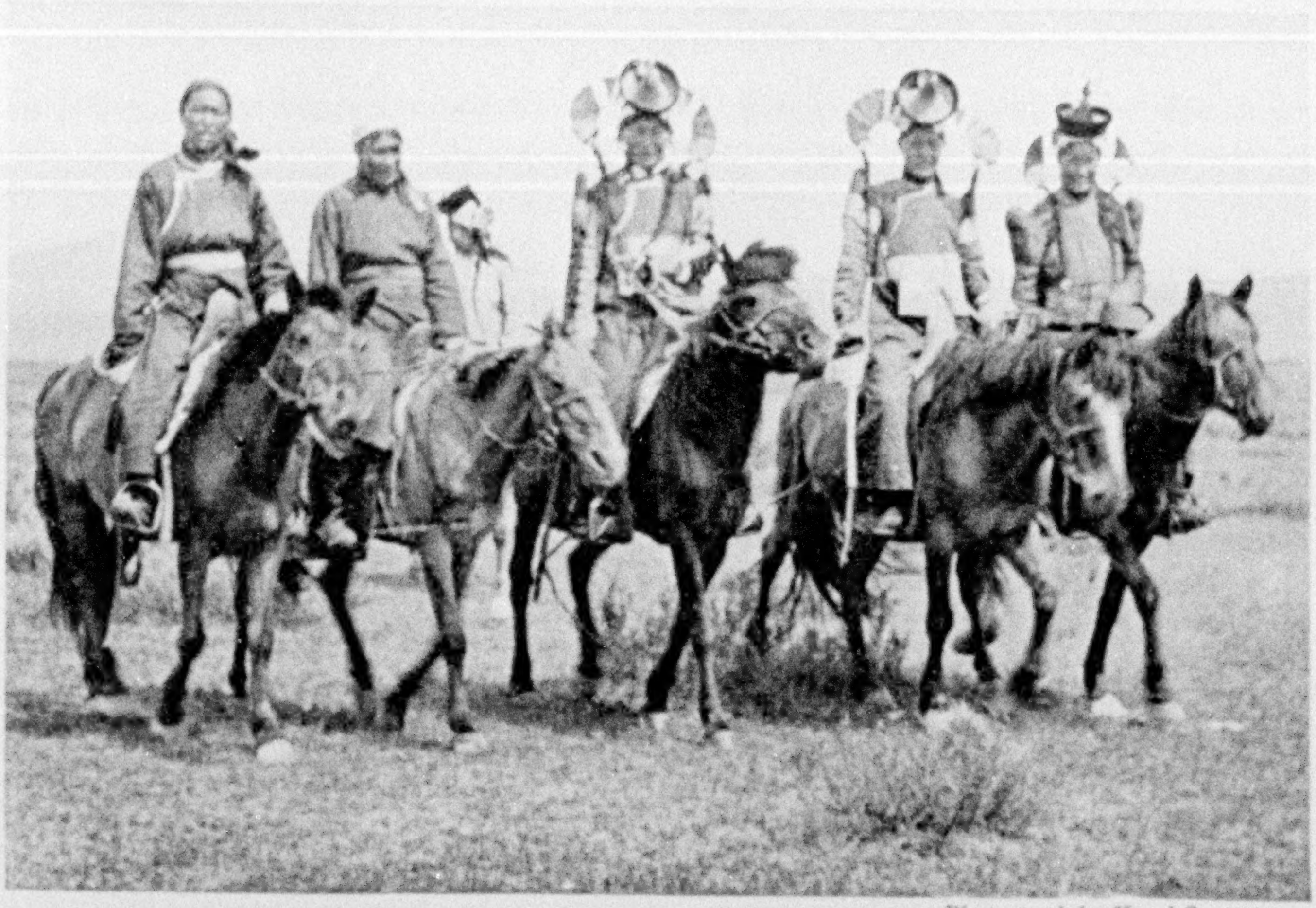
The first unfamiliar trait in the mule which attracted my attention was while scouting after Apaches in the mountains of Arizona, where there were no roads and few good trails.

The trail of Indian marauders was certain to lead into rough country, and to approach them at all, night marches were necessary. Frequently a trail would fork and it would require careful examination to determine which one the advance party had followed.

The pack mules never seemed to have any difficulty. As long as they could hear the tinkling bell of the leader, usually a white mare ridden by the cook, they moved along unconcernedly.

In the night or during mist and rain, the mules which had fallen behind would put their noses to the ground and without any hesitation follow the fresh tracks. They would come into the camp on the darkest night without hesitation, when cavalrymen, leading their horses, would sometimes lie out until morning after having become confused as to the trail.

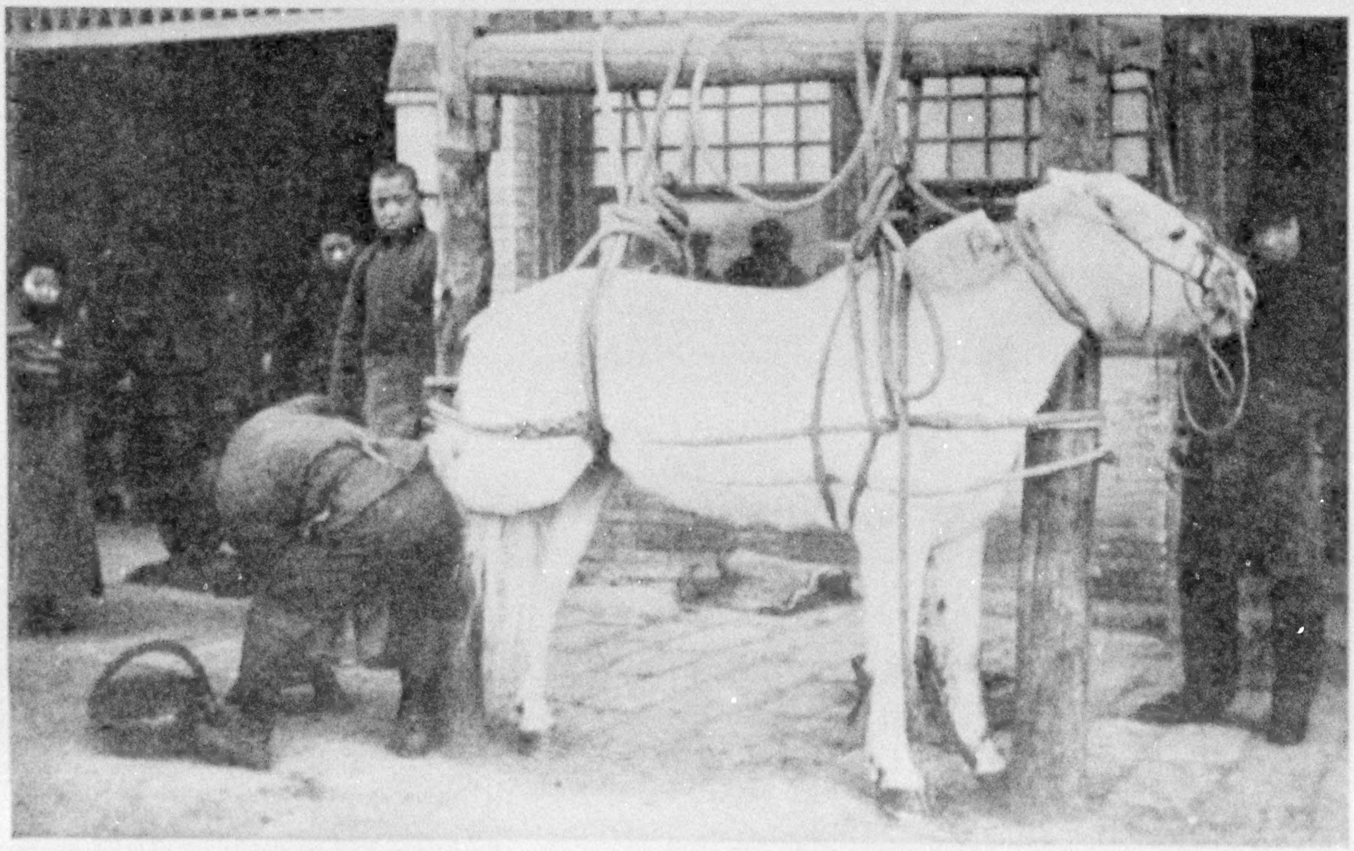
It was undoubtedly the sense of smell, which is highly developed in the mule, that enabled him to discern where the



Photograph by Knud Sorensen

MONGOLIAN WOMEN ON THEIR WAY TO A FESTIVAL

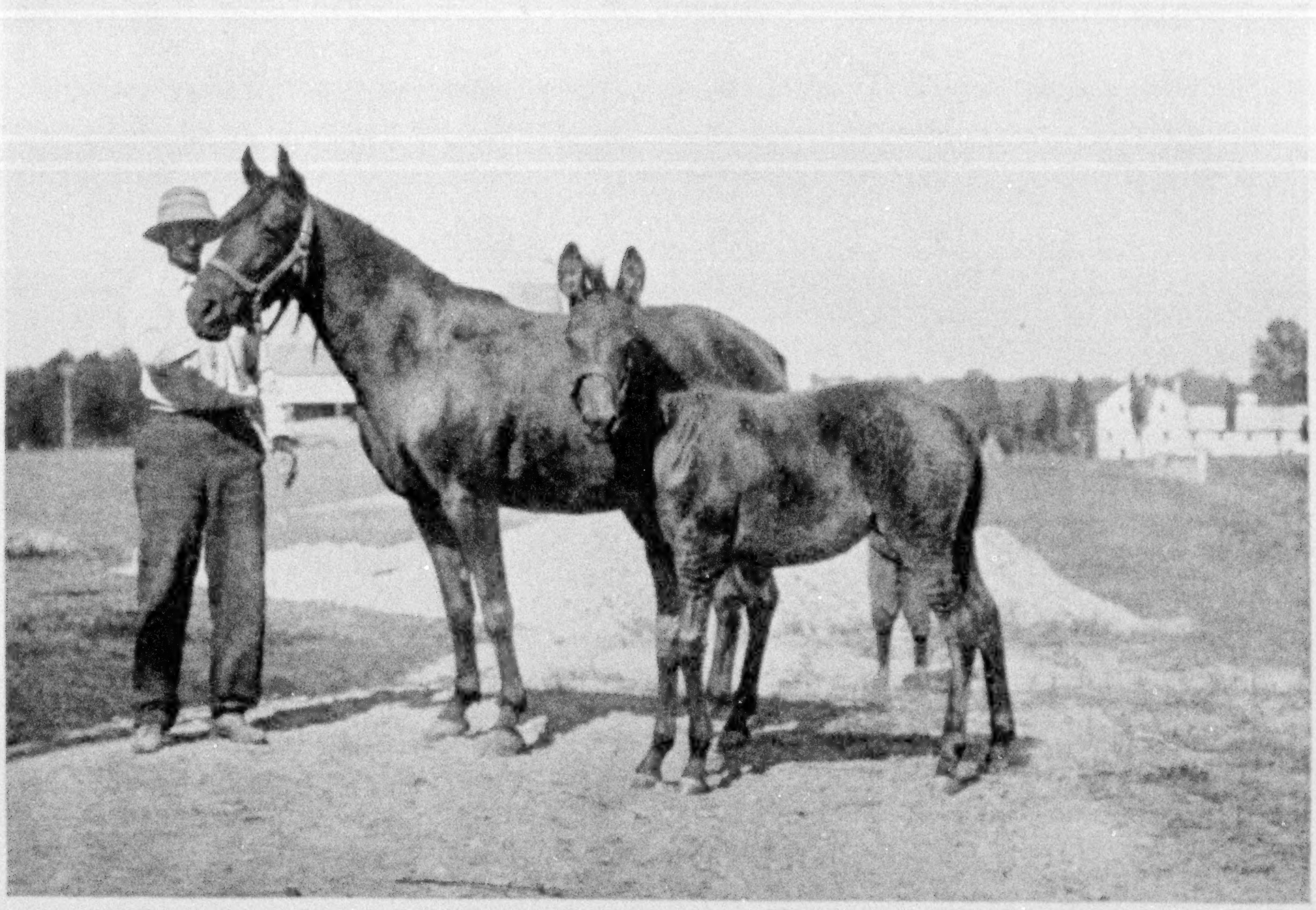
The four horsewomen with elaborate headdresses are the married members of the group. Men and women use the same types of saddle. The Mongols practically live on horseback, and when forced afoot develop an unsteady, rolling gait (see "The People of the Wilderness," in THE GEOGRAPHIC for May, 1921.)



Photograph by J. A. Muller

CHINESE METHODS OF "SAFETY FIRST"

This strait-jacket would be worthy of a surgical operation, but the mild-mannered horse is only being shod.



Photograph by U. S. Department of Agriculture

THE ZEBRASS, A HYBRID ANIMAL, AND ITS MOTHER

The offspring of horse and ass—our common mule—has so many of the excellent qualities of both animals that repeated efforts have been made to mate the zebra with the horse. The result has been only a qualified success. The colt shown here was sired by a zebra and its dam is a mare. Note the stripes around the front and hind legs and the zebraic ears.

turf had been bruised or fresh earth turned up.

PACK MULE GIVES WARNING THAT SHE MIGHT DESERT

While in charge of the regimental pack trains in Mexico, when the American and Mexican troops coöperated in destroying Victorio's Apaches, I was ordered to leave the command on the return march to the American side and assemble supplies at Apache Pass, in the Chiricahui Mountains of Arizona.

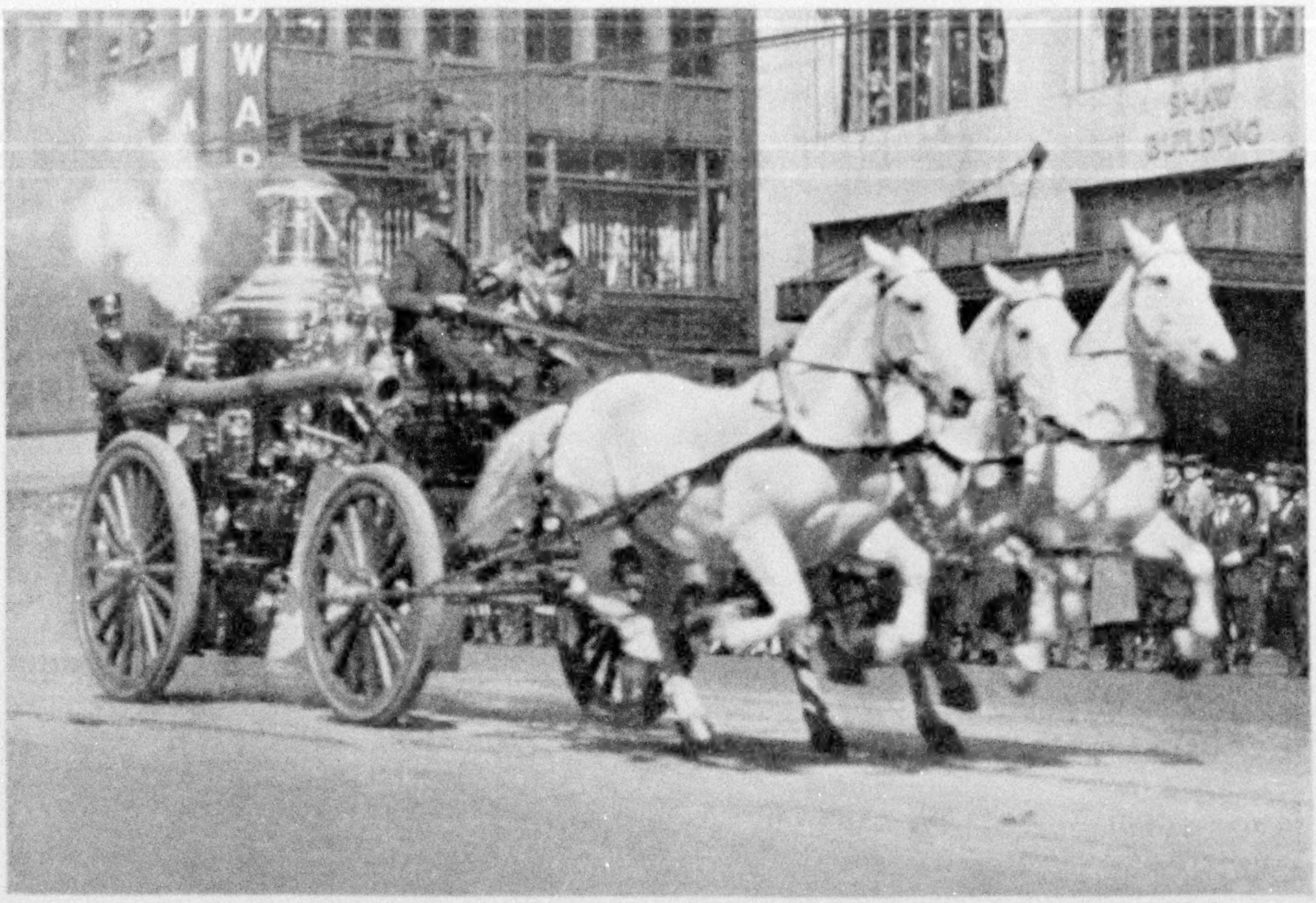
I selected a very small pack mule, often used by parties on hunting trips and accustomed to leaving the bell mare, although all pack mules do that regretfully. I was accompanied by the regimental quartermaster sergeant and one private, who was killed in that vicinity by Apaches on a subsequent raid.

We crossed the San Simon Valley from the Stein's Peak range to the Chiricahui Mountains and traveled on an old Indian trail until darkness set in.

When it had become dark enough so that no Indians could see when we left the trail, we turned up a ravine and, after going into the mountains some distance, climbed to the top of the bare divide separating two ravines and unsaddled to rest until daylight.

The horses and the mule were secured with lariats and we lay down without starting any cook fire to attract attention. The moon was shining with the brightness peculiar to the Arizona region, and I covered my face with my campaign hat and went to sleep.

The horses were tired with their long journey and after grazing awhile had lain down. The little mule, accustomed to night herding with the pack train, continued to move about, and finally managed to loosen the lariat from the bush to which she was tied. The average mule would have smelled out the back trail and returned to the bell mare, but the little animal with us seemed to understand our plight, so she came and put her muzzle




Photograph by Mark W. Stevens

THE LAST RUN OF THE FIRE HORSES OF DETROIT

The city of automobiles converted its last remaining horse-drawn fire-fighting machinery into motor-driven apparatus in 1922.

against my hat and awakened me. She seemed to know that if she was not tied up again she might abandon us, so I got up and secured her once more.

MULES GIVE UP WHEN WATER GETS IN THEIR EARS

Mules give up easily in water, if it gets in their ears, but I have seen teams drag heavily loaded wagons through the vilest quicksands, urged only by the voice of a humane driver. Much depends upon the handling of any stock, and mules respond to gentle treatment as readily as does a Thoroughbred.

I was nearly ruined for life by a vicious mule, a notorious kicker; but mules are no more given to kicking than horses, except that they are more often fed under sheds in common troughs and acquire habits of crowding and kicking for choice places.

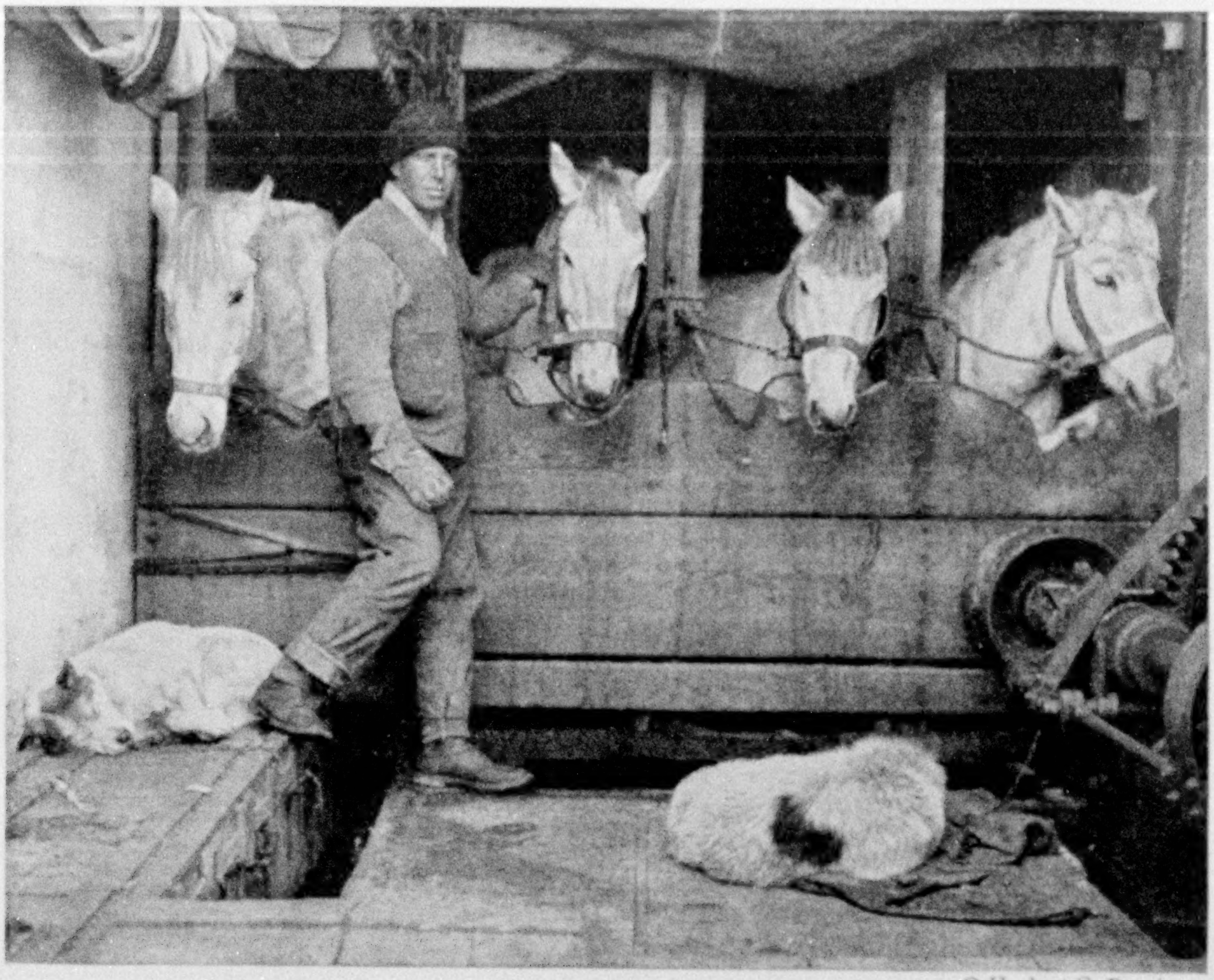
The good and not the occasional vicious characteristics of the mule should be expatiated upon, for with our growing population and the foreign markets open to America, the annual production of mules should reach the half million mark in a few years.

When the breeding of horses on any blue-grass farm is discontinued, the breeding of mules is the proper and natural substitute.

There are some congeners of the jack and the mule which may be properly mentioned here, although they have never played any useful part in the service of mankind.

Ordinarily wild animals which prey upon each other, and especially those which attack domestic stock, are made away with unceremoniously whenever opportunity offers, but those which merely eke out a precarious living by grazing in desert or unoccupied country are allowed to survive. Among these may be mentioned the wild asses of Asia and Africa, the zebras, and the quaggas. All these species are included by zoölogists as one genus in the horse family (see pages 480, 481, 485, and Color Plates II, III, IV, and VI).

The horse has some very distinctive characteristics, however, in the long



© Herbert G. Ponting

CAPTAIN L. E. G. OATES AND SOME OF THE SIBERIAN PONIES THAT HELPED CAPTAIN SCOTT TO REACH THE SOUTH POLE

Nineteen of these hardy animals were carried on the *Terra Nova*. They were the especial charge of Captain Oates, of the Inniskilling Dragoons, who, with frozen feet, sacrificed himself on the return march from the Pole in an effort to relieve his comrades of his impediment.

mane, the tail covered with hair, short ears, and a forelock of hair between them, while in proportion to its size its legs are longer, its hoofs broader, and its head smaller than in the species known as asses and zebras.

Between the last two named there is a general distinction easily recognizable, in that the asses are usually of plain color, while the zebras are distinctively striped.

### THE ZEBRA REFUSES TO AID IN BEARING MAN'S BURDENS

Leg stripes, and especially line stripes along the spine, are common in certain breeds of horses and have given opportunity for much scientific discussion as to their origin. The asses are not all marked alike, those of Asia being quite distinct from those of Africa, just as the stripes of the Mountain zebra differ from those of Grévy's and Chapman's zebras (see text, page 480, and Plates II and III).

While there are known instances of zebras having been trained to harness, they have successfully resisted all efforts to induce them to participate in modern civilization by bearing a part of man's burden. Of course, that failure would have caused their annihilation had they been so situated as to be in the way of or had persisted in grazing lands desired by man.

Experimentation in crossing the male zebra on the mare of the horse species or burro or donkey mares has resulted in animals of no practical value (see illustration, page 559).

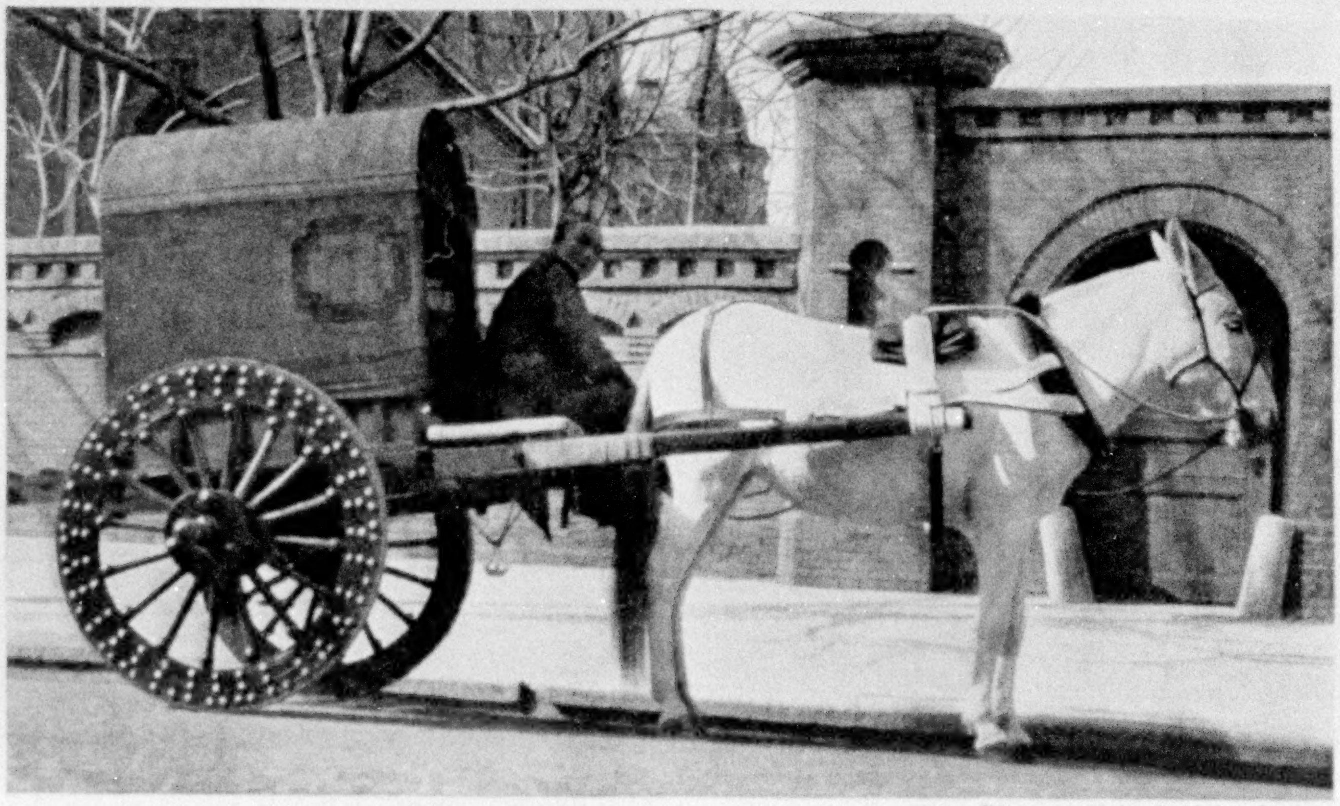
### THE HORSE IN MOTION

From the earliest period when artists and sculptors began to depict horses, the

Photograph by A. W. Cutler

THE "NOTION AND NOVELTY" MERCHANT OF PALERMO: SICILY

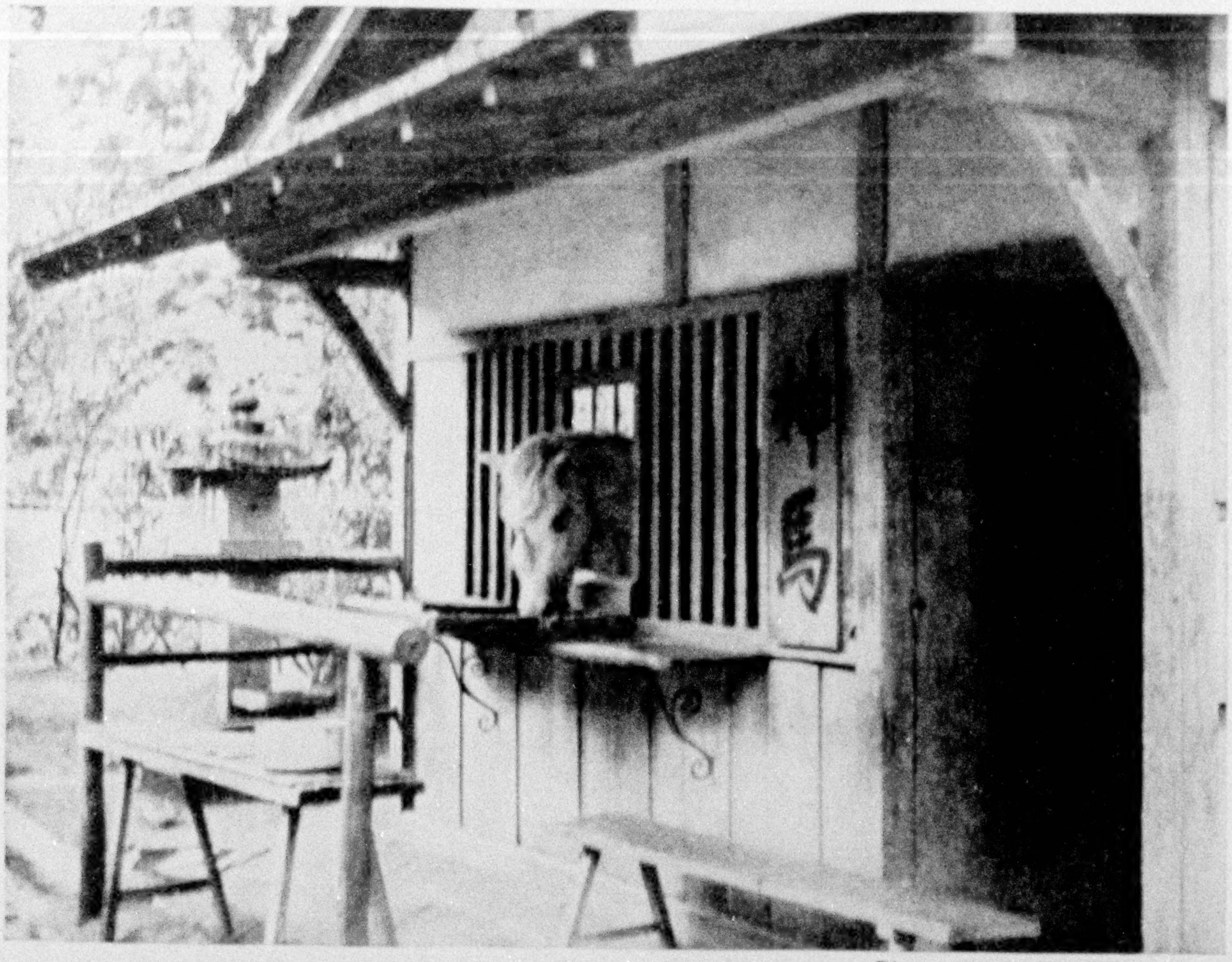
Many of the small "shops" of southern Italy and Sicily are perambulating, the physical "push" of the keeper or the "pull" of the faithful little donkeys, the chief beasts of burden in those countries, being the main motive forces for their circulation through the villages and towns.



Photograph by J. T. McGarvey

THE HOBNAILED WHEELS OF THE CHINESE CARTS LEND PICTURESQUENESS TO PEKING STREETS

From the great Mongolian plains to the north of the Celestial Republic come the wild ponies which were domesticated before the Aryans migrated to Europe (see page 558).




Photograph by W. F. Robertson

A SACRED HORSE OF JAPAN IN ITS TEMPLE STALL

Before the arrival of Americans, the Japanese horse was never used as a draft animal (see "The Empire of the Risen Sun," in THE GEOGRAPHIC for October, 1923).

idea of motion, especially of the gallop, was represented by an extension forward of both fore legs, and similarly to the rear of both hind legs (see pages 460 and 461).

When, through the instrumentality of instantaneous photography, it was learned that the feet of the galloping horse never occupied the positions indicated by the artists, there was a sense of confusion and perhaps of humiliation that for so many centuries we had been sufficiently guileless as to accept the artist's version of the horse in motion.

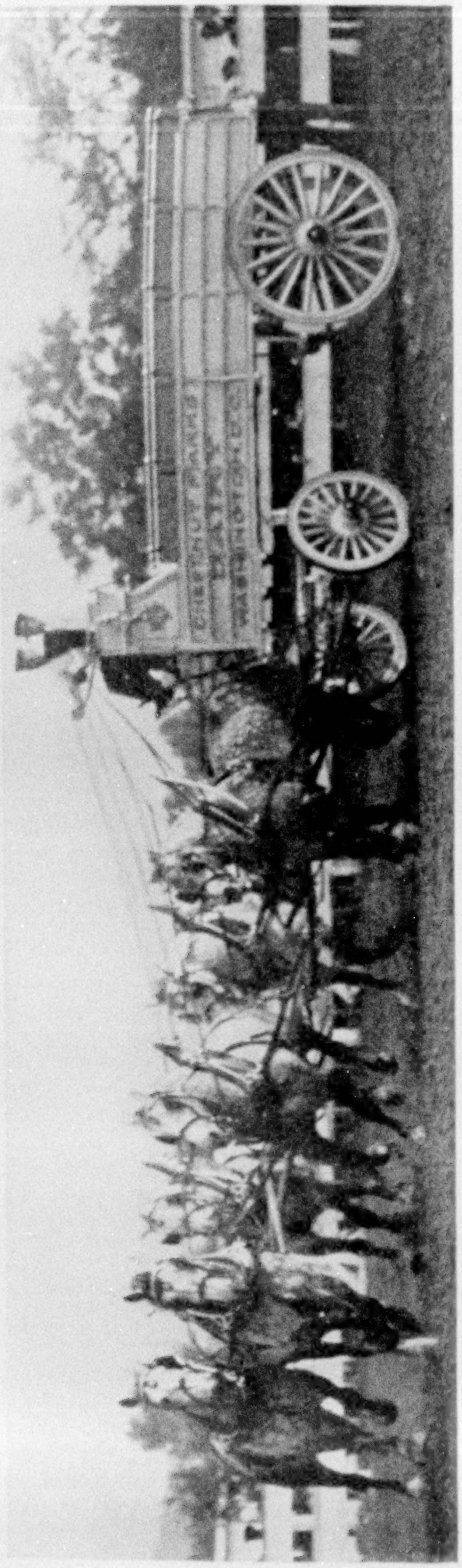
We now know that at the moment of the stride, when all the feet of the horse are off the ground, the soles of the front feet are turned up and not down, as in the old pictures. It should be remembered, however, that when the camera catches the horse with his legs folded up under him in the air, it is not motion, but one arrested instant or position of movement—a complete stop, in other words.

To the untrained eye a single view of the horse in such a position does not indicate the gallop any more than it does a "buck" jump in the air. In the other periods of the stride, when the horse is on one foot, as shown by the instantaneous photograph, there is no suggestion whatever to the ordinary mind that the horse is running or galloping (see pages 473 and 475).

## ARTISTS ATTEMPTED TO REPRESENT CONTINUOUS ACTION

It is only by remembering the positions of the horse's feet at the walk and trot that the trained eye comprehends the fact that the horse shown on one hind or fore foot is running.

The artists undertook to represent motion as a continuous action, and no one ever misunderstood what was represented. When an artist paints a snow scene, the shadows are generally indicated as blue; but we know that a handful of snow is



A BLUE-RIBBON SEXTET OF HEAVY DRAFT HORSES

These grade Percherons (three-fourths to seven-eighths pure bred) have taken prizes at many horse shows. They are from seven to nine years of age and under normal conditions will be in service until they are 17 or 18. They weigh from 1,900 to 2,250 pounds each and their market value is from $1,000 to $1,250 each. They have been exhibited at Fort Myer, Va., as true type of heavy artillery horse.

white. We now know the relative positions of the horse's feet at each instant of motion, through scientific analysis of instantaneous pictures, but none of the latter truly represents anything but a moment of arrested movement.

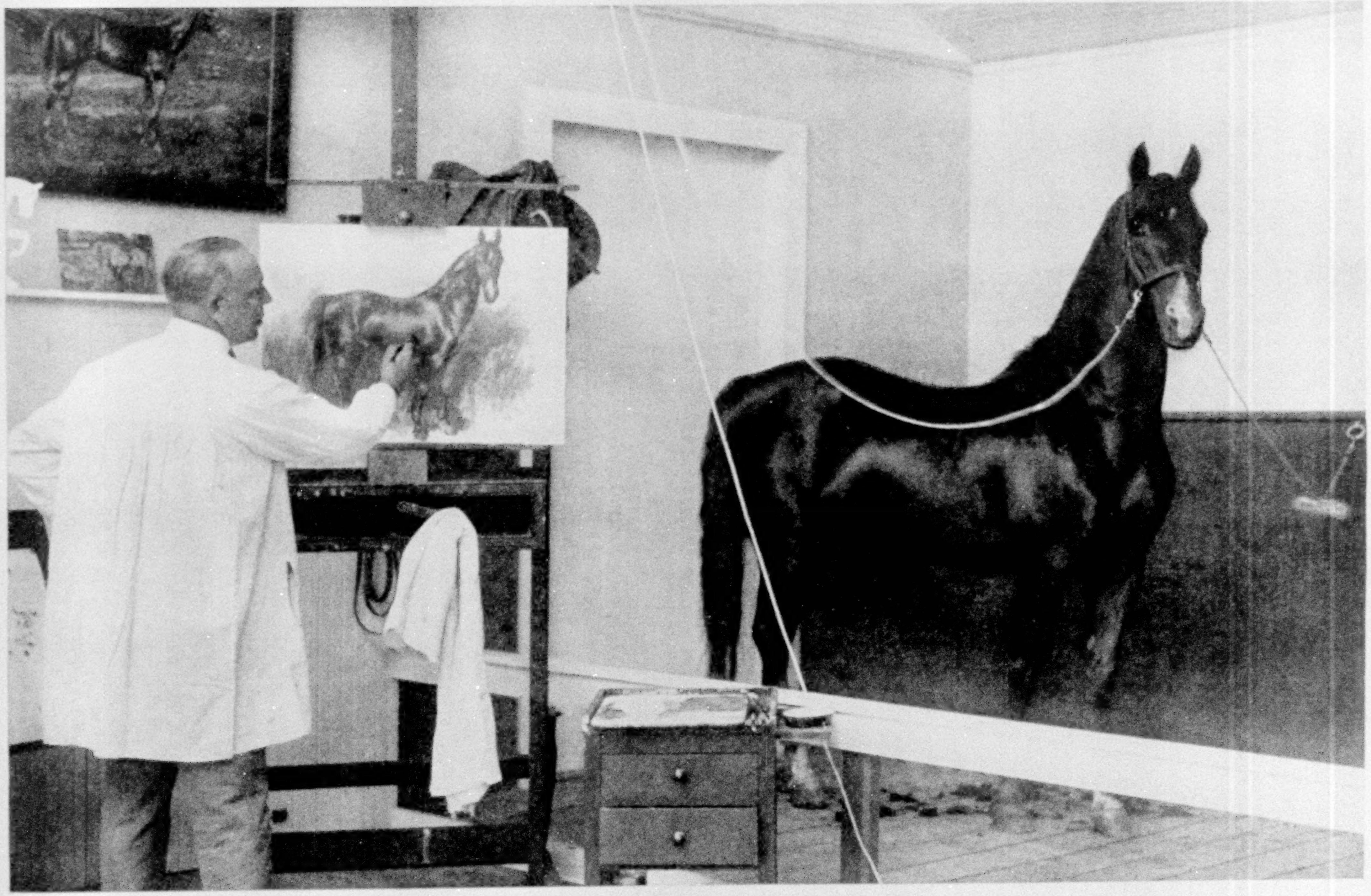
The artists may never come into their own again, because modern education demands specialization and acceptance of scientific proof of the error of common belief. No one, however, has yet pictured the horse, either in painting or by photography, in such manner as to convey the sense of exhilarating motion at the gallop, with the feet and legs shown as science has now established them at each instant of that gait.

While the artist's method of painting the horse at a gallop probably originated in Egypt (see page 461), it found its way to the Orient and was unhesitatingly accepted by all the then known world as an easily understood representation of continuous motion at speed.

## PICTURES OF RUNNING HORSE RESEMBLE SPEEDING DOG

As a matter of fact, the old illustrations of the running horse more nearly picture the movements of the dog at speed than anything else. If the actual trail or footprints of the running horse be examined, it will be found that the feet do not operate in pairs, but that each comes to the ground in turn, making imprints akin to those made by the spokes of a rolling wheel with the tires and felloes removed.

In jumping an obstacle at speed, the instantaneous photographs usually show the front feet extended as if the horse would land on both of them at once, but he never does; for, the instant he approaches the ground, he prepares to land on



A PORTRAIT PAINTER OF HORSES AND ONE OF HIS MODELS

Mr. Edward Herbert Miner, the artist who painted the 24 canvases from which the illustrations in color appearing in this number of THE GEOGRAPHIC were reproduced, in his studio at Westbury, Long Island. Most of Mr. Miner's paintings were made from life.

one foot and places the other forward for the next step in his stride (see illustrations, pages 474, 528, 556, and 557).

The public is becoming quite familiar with the appearance of race horses at speed by reason of the publication of many photographic illustrations. These modern pictures show the present jockey seat, which was adopted under the belief that it materially increases the speed of the horse by putting the weight of the rider over the shoulders instead of on the back.

It is quite impossible to tell just what improvement in speed has come from the new seat, because both horses and tracks have been undergoing constant improvement. The jockey seat is unsightly and insecure and would not be retained a moment if it was not believed that it enables a particular horse to make faster time on any track than he could make over the same track with the rider sitting down on his back, as in the old seat.

Ever since the construction of the famous wooden horse at the siege of Troy, in which more attention was paid to the accommodations for a detachment of soldiers in its interior than to its appearance as a work of art, it has been the custom to criticize horse statuary. This tendency to criticize is seldom applied in judging statues of other animals, such as cats and dogs, and yet there are hundreds of people who possess those household pets to one who owns a horse.

Of course, one does not have to be a horse-owner to be a distinguished critic of horse statuary, for sculptors have learned that on that subject the man in the street ranks high.

### WASHINGTON'S EQUESTRIAN STATUES MUCH MALIGNED

Washington probably contains more equestrian bronzes than any other city in America, and not one of them is safe from the jibes of the public, because it has become the fashion to criticize them. Each new generation of sculptors seems to add fuel to the flame by pointing out the weird defects and shortcomings of this or that statue; and yet there is much to be proud of in the bronze horses of the Capital, besides the fact that they perpetuate the memory of men who have rendered the state some service.

Probably the most criticized of the many statues is that of Andrew Jackson, which was cast from cannon captured at the battle of New Orleans, specially to commemorate the defeat of an army of Wellington's Peninsular War veterans, commanded by his brother-in-law, at the hands of American forces comprised mainly of militia.

No other sculptor has followed Mills' example in reproducing a general's charger in the act of rearing, yet that attitude is taken intuitively by many spirited horses at the sound of the guns, or even at the first notes of a military band where drums are much in evidence. Mills has caught the horse in one of these familiar positions and has shown General Jackson retaining his seat in perfect balance (see illustration, page 552).

Andrew Jackson was not only a lover of horses, but a rider of rare ability, and the rearing of a nervous or excitable horse was not apt to disturb him in the saddle.

Presuming that Mills designed the pedestals of the Washington and Jackson statues, some modern sculptors might take a leaf from his book of experience, for the later custom of placing statues on high pedestals, as are those of General Sherman and General McClellan, restricts close observers to a view of the horse's belly. In all exhibitions of pictures, some are doomed to occupy the sky-line, but there is no necessity for this in the placing of statues in public parks.

Taken as a whole, the equestrian statues of deceased generals in the public parks of Washington are truer to life, and as works of art are superior in quality to the incongruous group in Statuary Hall, under the dome of the Capitol, contributed by the States.

The people of America have many reasons for pride in the Capital of the Nation, not the least being the beautiful avenues, broken at intervals by circles containing equestrian statues of distinguished generals who have received generous recognition for services in past wars.

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Three little chefs in spotless white,
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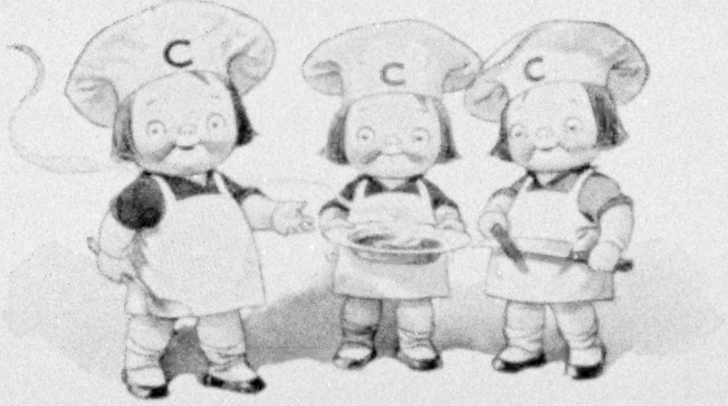

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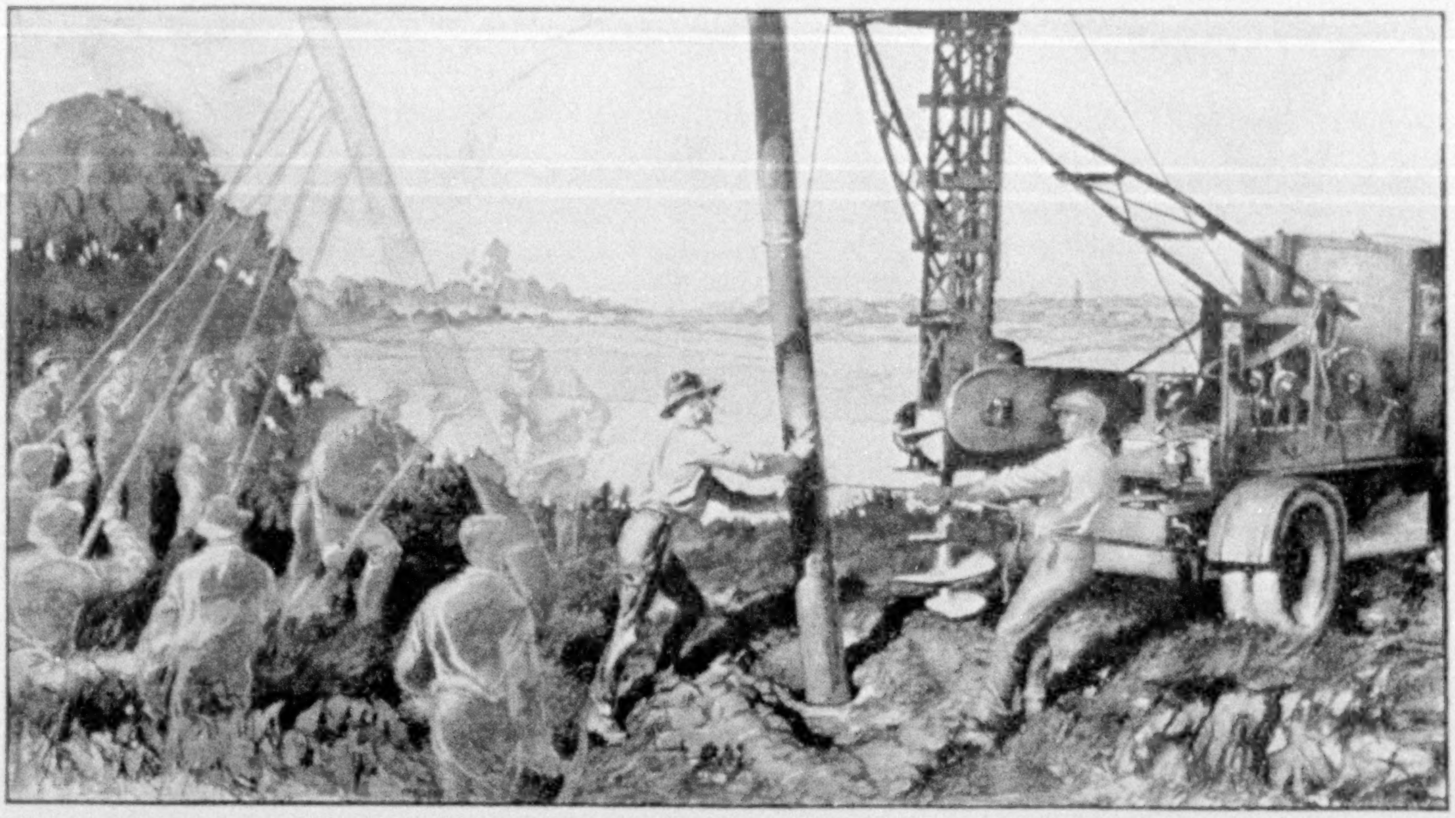

# Multiplying Man-power

To the man with pick and shovel the digging of holes for telephone poles is a slow and arduous task. Under favorable soil conditions three to five holes are for him an average day's work. Under adverse conditions perhaps he can account for only one. When the hole is dug, eight or ten men are required to raise the pole with pikes.

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Hundreds of devices to quicken telephone construction, to increase its safety to the employee, and to effect economies are being utilized in the Bell System. Experiments are constantly being made to find the better and the shorter way to do a given job. Each tool invented for the industry must be developed to perfection.

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AMERICAN TELEPHONE & TELEGRAPH CO. BELL SYSTEM AND ASSOCIATED COMPANIES

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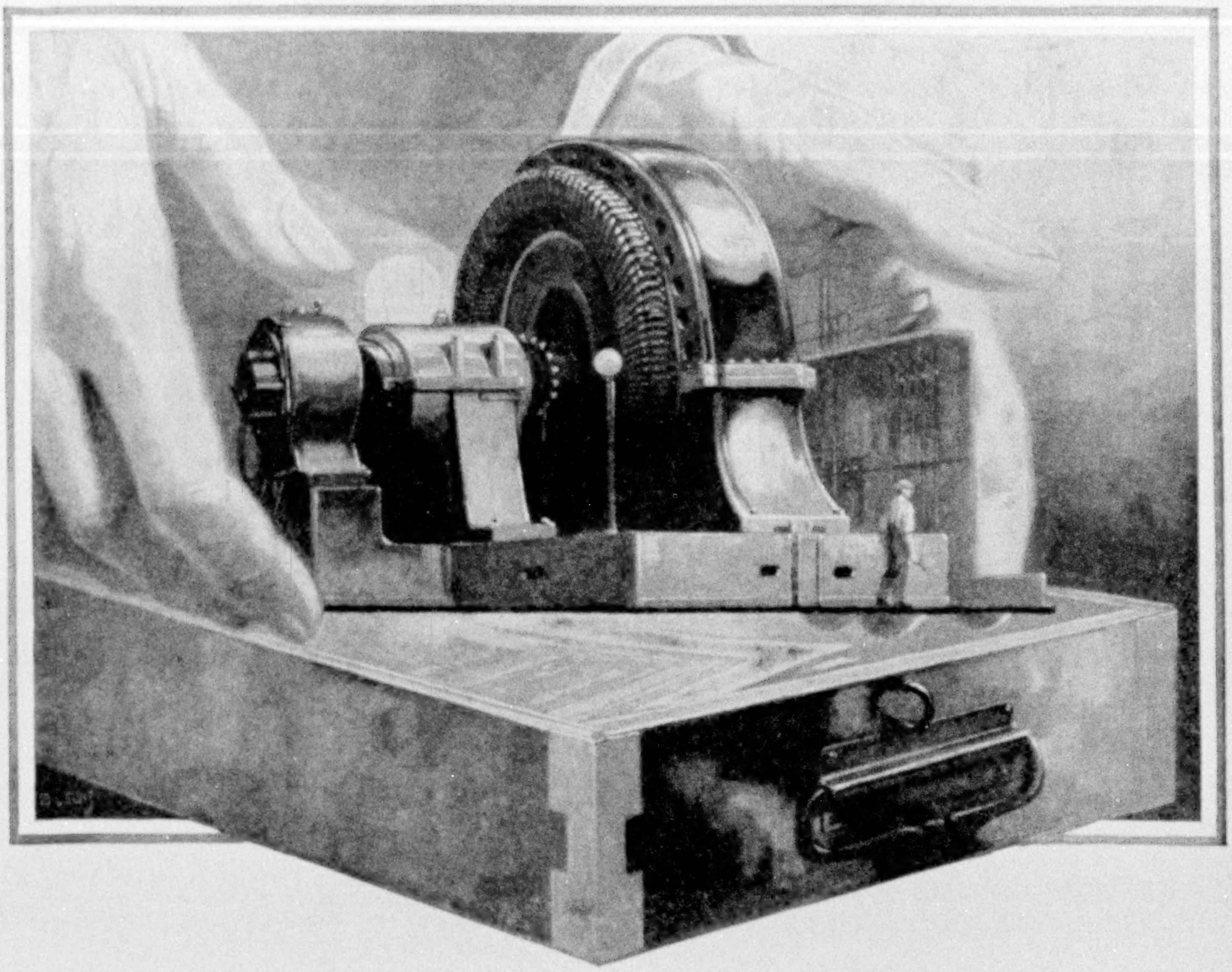

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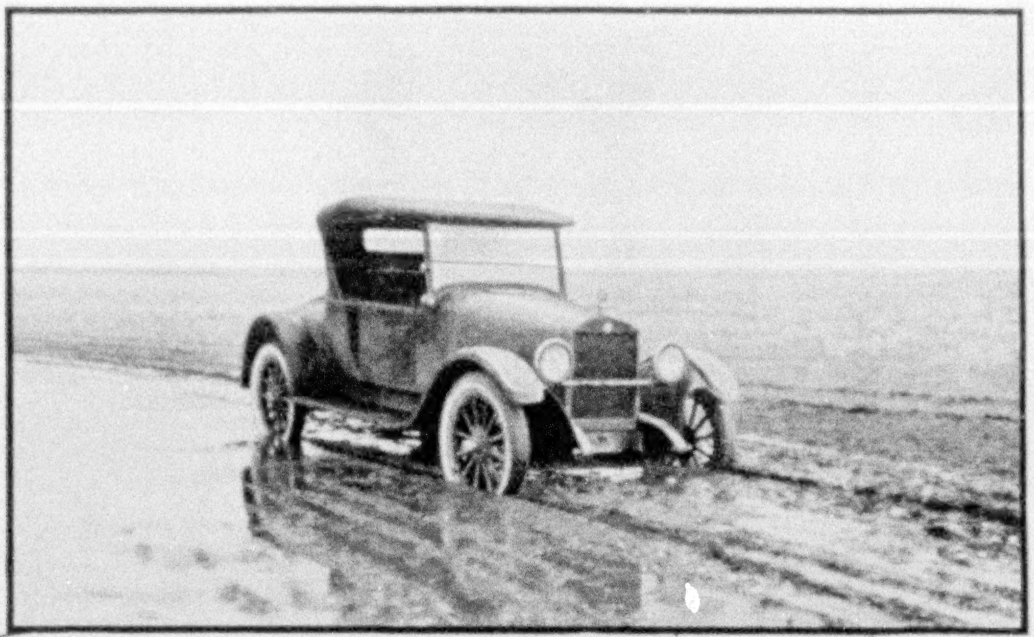
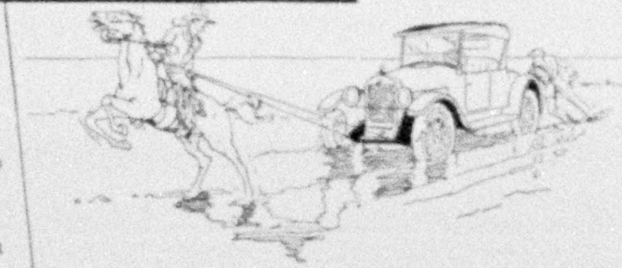


Actual photograph showing what happened to John M. Taylor, of Hutchinson, Kans., before HE got his Philco. What experiences—humiliating or dangerous—have YOU had with ordinary batteries? We would be glad to hear from you.



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June 22, 1925

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Yep. I've got a Philco,- now.

Sincerely yours,
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Such stores receive every package of Whitman's *direct*— not through a jobber. Frequent shipments are made them by express.

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There is such a store in nearly every neighborhood in the land, an almost perfect system of candy distribution, on a national scale.

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Whitman's
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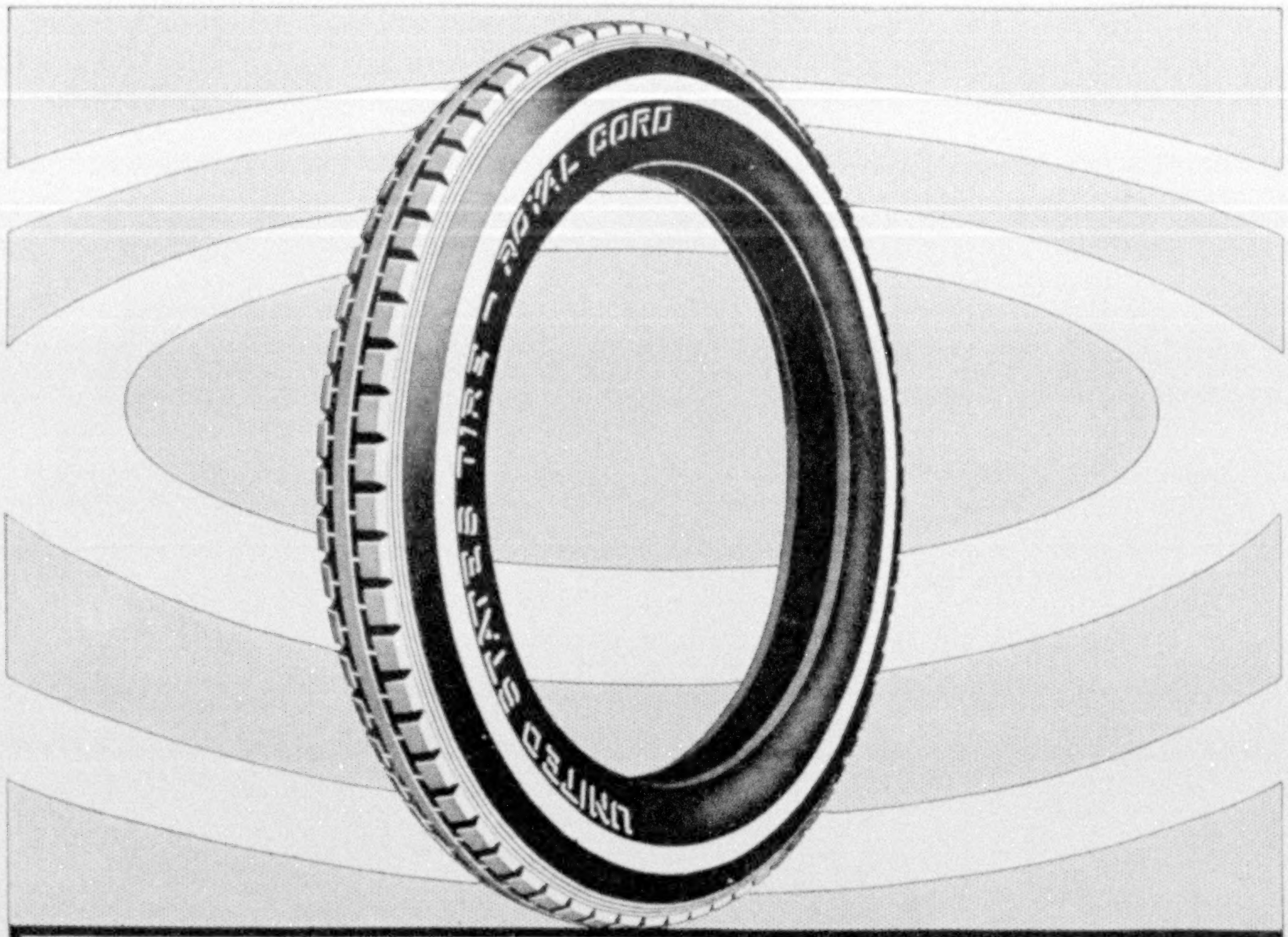


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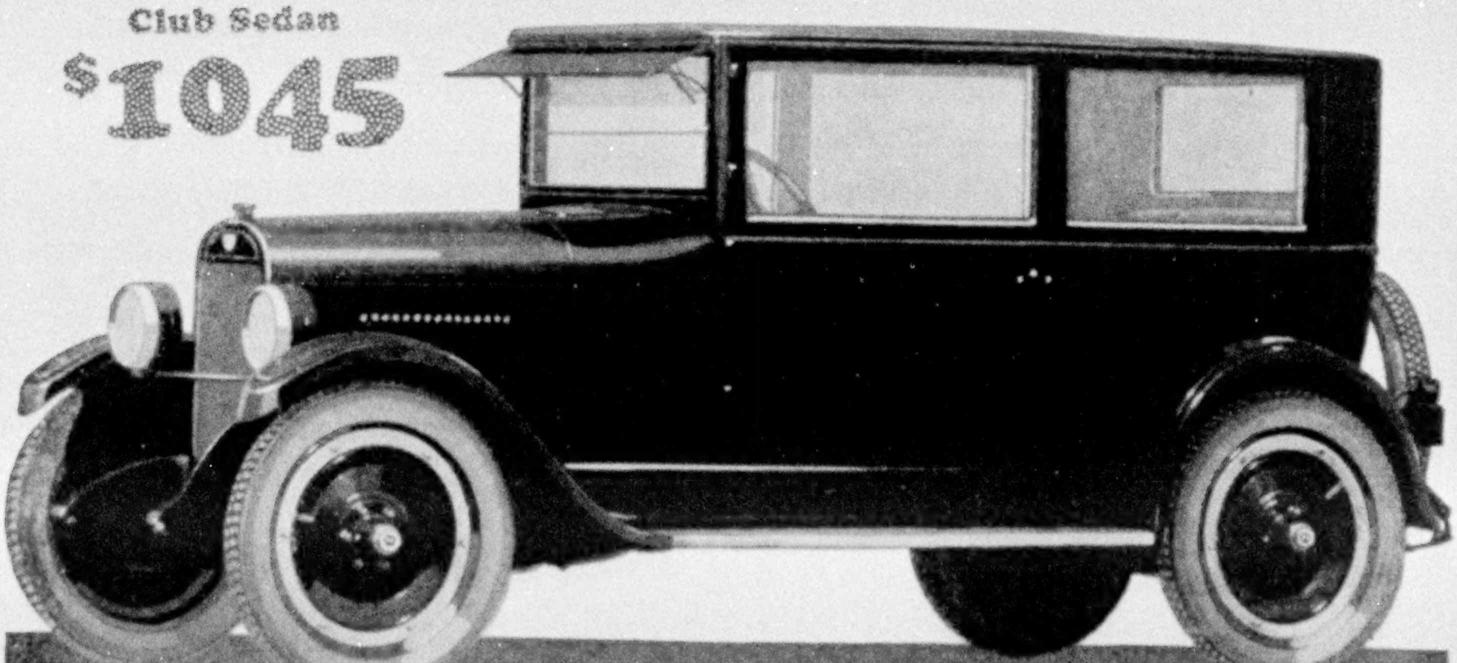

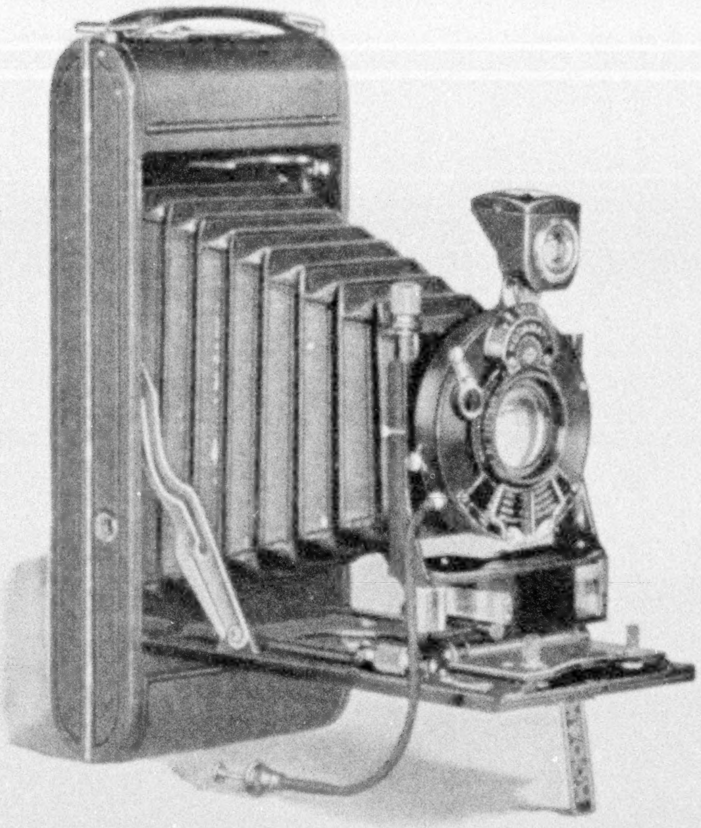

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---

Dental science has found two ways to effectively fight that film. One acts to disintegrate the film at all stages of formation. One removes it without harmful scouring.

After many tests, these methods were embodied in a new-type tooth paste. The name is Pepsodent. Now careful people of some 50 nations employ it daily, largely by dental advice.

### No harshness

Some results are quickly seen and felt. No one can doubt their benefits.

But Pepsodent also multiplies the alkalinity of the saliva and multiplies its starch digestant. Those are Nature's agents for fighting acid and starch deposits on the teeth. Every use of Pepsodent gives them manifold effect.

---

Thus Pepsodent protects the precious enamel in natural and gentle ways, and without any harmful scouring.

Make this ten-day test. Note how clean the teeth feel after using. Mark the absence of the viscous film. See how teeth become whiter as the cloudy coats disappear.

This is vastly important to you and your family. Cut out coupon now.

**Protect the Enamel**

**Pepsodent disintegrates the film, then removes it with an agent far softer than enamel. Never use a film combatant which contains harsh grit.**

PAT. OFF.
**Pepsodent**
REG. U.S.

*The New-Day Dentifrice*

Now advised by leading dentists the world over

**10-Day Tube Free** 1306

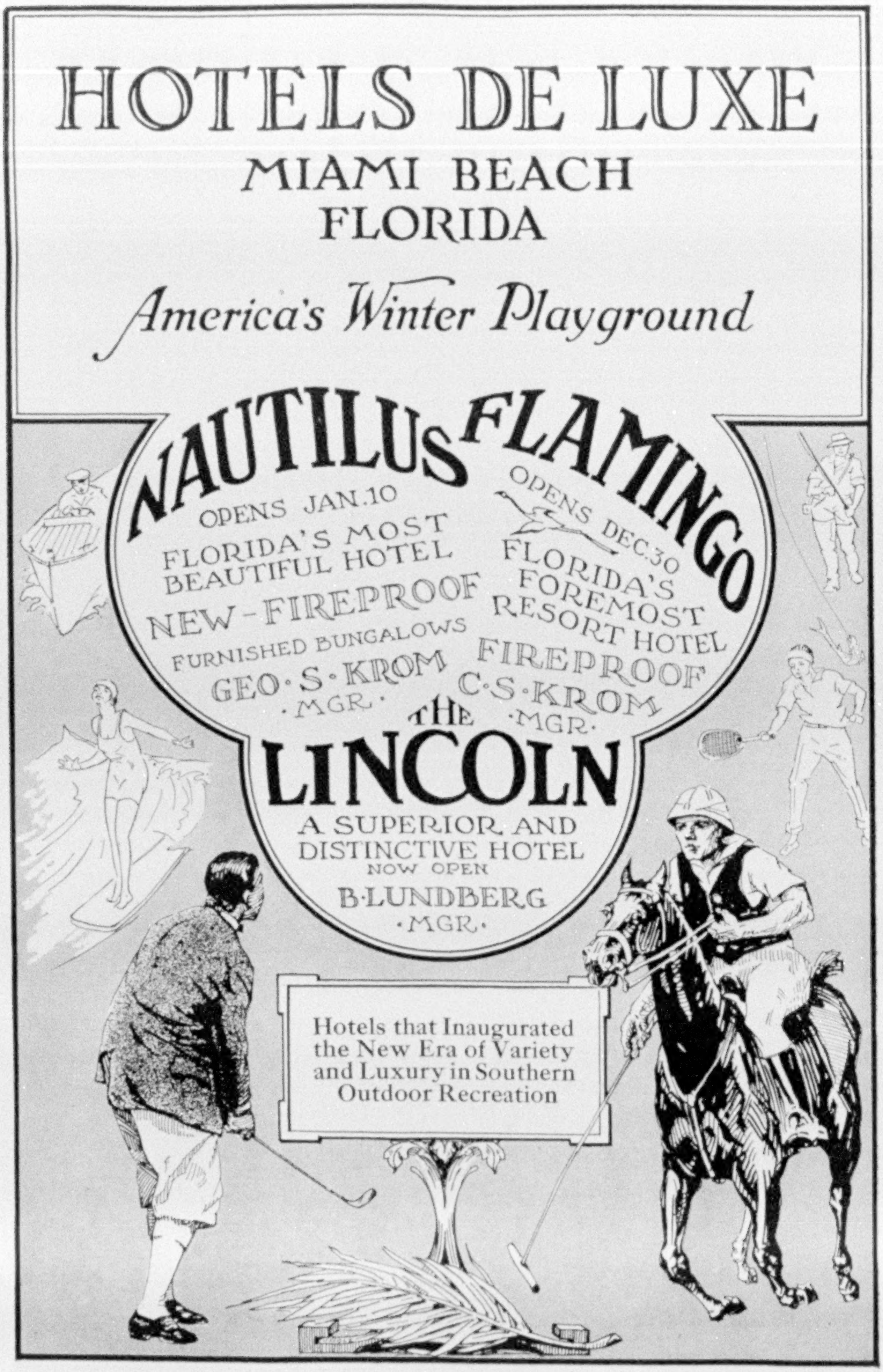
THE PEPSODENT COMPANY,
Dept. 328, 1104 S. Wabash Ave., Chicago, Ill.
Mail 10-Day Tube of Pepsodent to

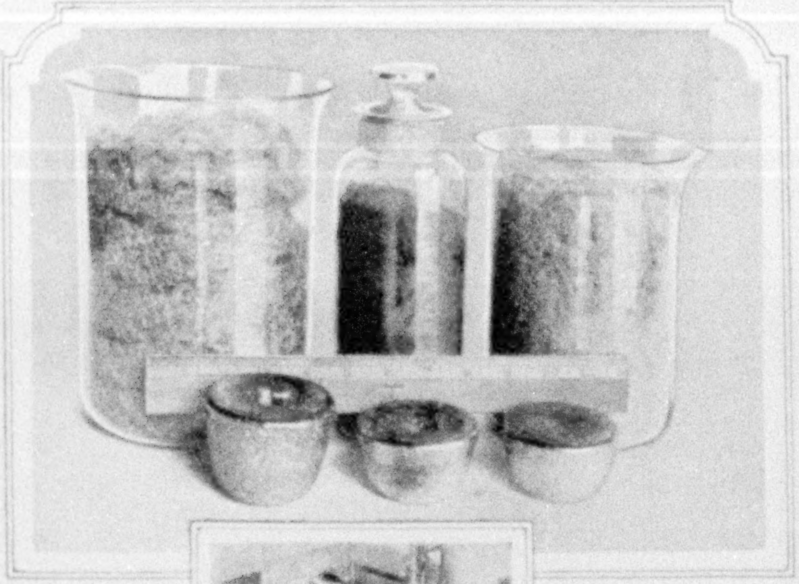
..................................................

..................................................

..................................................

Only one tube to a family


HOTELS DE LUXE
MIAMI BEACH
FLORIDA
America's Winter Playground
NAUTILUS
OPENS JAN. 10
FLORIDA'S MOST BEAUTIFUL HOTEL
NEW-FIREPROOF
FURNISHED BUNGALOWS
GEO·S·KROM ·MGR·
FLAMINGO
OPENS DEC. 30
FLORIDA'S FOREMOST RESORT HOTEL
FIREPROOF
C·S·KROM ·MGR·
THE LINCOLN
A SUPERIOR AND DISTINCTIVE HOTEL
NOW OPEN
B·LUNDBERG ·MGR·
Hotels that Inaugurated the New Era of Variety and Luxury in Southern Outdoor Recreation



Golden cup cakes. The jars contain precious metal too—gold in the central jar and gold and platinum particles in the other two.

Pouring the mixture of platinum, gold and silver.

# Gold!

## – in your telephone

"SPEECH is silvern, silence is golden", says the adage—but the men who made your telephone know that gold assists in the perfect transmission of speech.

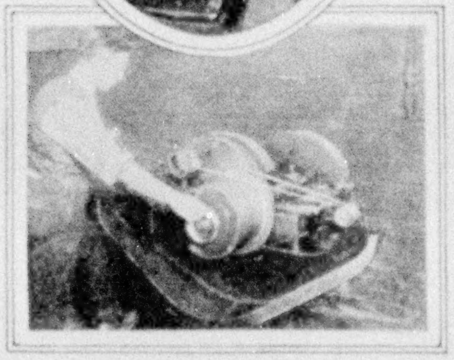
So fine are the materials and careful the workmanship that you would think a telephone some masterpiece of the jeweler's art.

But if you consider its strength of construction and remarkable lasting quality, your telephone seems as though hammered out on a blacksmith's forge!

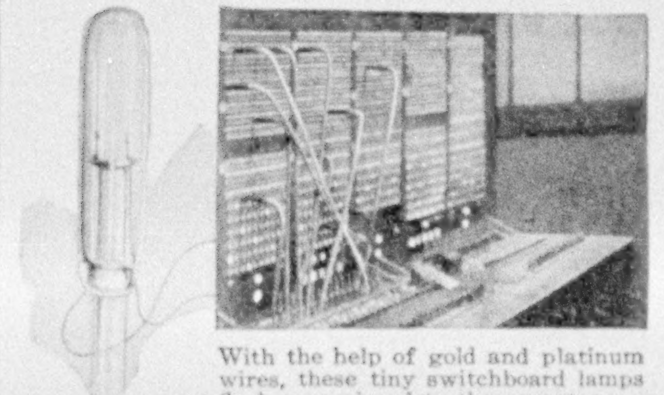
A feature of this metal valuable to the telephone is its power to resist corrosion and wear.

**Western Electric**

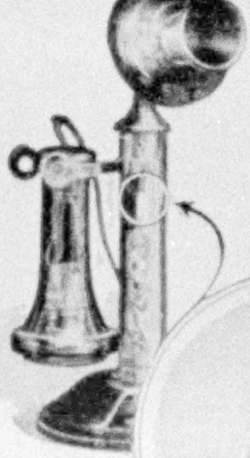
*Since 1869 makers of electrical equipment*

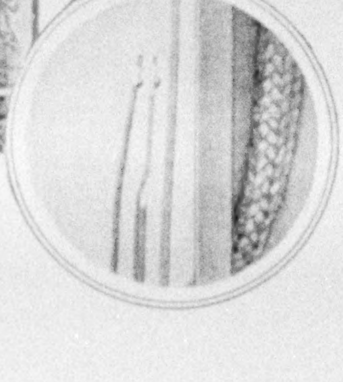


Drawing the metal into wire: This process is helped by the high degree of ductility of platinum.



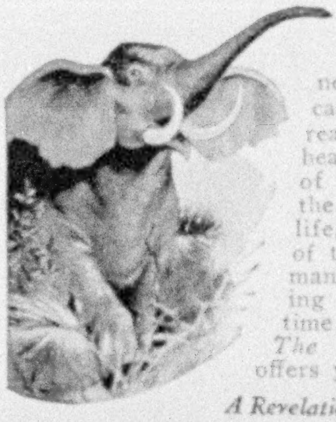
With the help of gold and platinum wires, these tiny switchboard lamps flash your signal to the operator.





The two points on the upright springs are the precious metal. Every time you take the receiver off the hook, these springs move to the left till the points make contact.

# The Most Amazing Romance Ever Written



Come out of the humdrum of daily life into a marvelous new world—where you can lift your eyes and read the story of the heavens, see into the depths of earth and ocean, view the activities of invisible life, look back to the dawn of the human mind, watch man as he solves the thrilling mysteries of life and time and space. All this *The Outline of Science* offers you, for it is

*A Revelation of the Secrets of Science*

*The Free Book Tells You All About It*

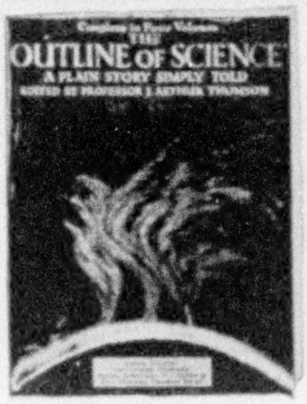
*The Wonderful Story of*

## THE OUTLINE OF SCIENCE

In a Profusely Illustrated Booklet

# FREE TO YOU

The interest in this epoch-making work has proved so intense that the publishers have prepared *for free distribution* a most interesting and strikingly illustrated brochure so that everyone may have the whole story of the most important publishing event in many years. With four plates in full color and over thirty half-tone pictures of scientific marvels, it shows how the four magnificent volumes of *The Outline of Science* describe the whole wonder-world of science. This fascinating booklet is yours free—send the coupon—no obligation and no expense.




*The Coupon Brings Your Copy of the Free Booklet*

G. P. PUTNAM'S SONS
Dept. 143
2 West 45th Street
New York

Send me by mail, without cost or obligation on my part, the free booklet with four color plates and over thirty half-tone illustrations, describing *The Outline of Science.*

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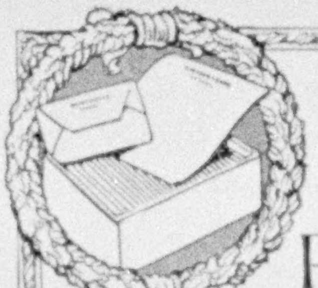
A TELESCOPE is a never-ending source of interest at your home, country-club, mountains, or seashore. American-made; as fine as money can buy. See one at your dealer's. Booklet on request.

Bausch & Lomb TELESCOPES

*Every sportsman should have a pair of Bausch & Lomb Binoculars as well*

**Bausch & Lomb Optical Co.**
Rochester, New York
New York Washington Chicago
San Francisco London



# *A Gift of Distinction*

# Personalized Stationery

Box of

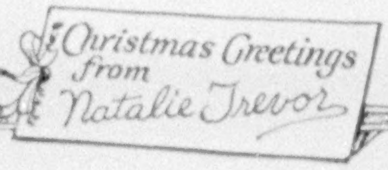
100 Sheets and 100 Envelopes Engraved with Name and Address **$2.95**

The solution of your Xmas Gift problem: A fine useful present reflecting good taste and consideration. Box of 100 sheets and 100 envelopes exquisitely embossed at top center of sheet and on envelope flap, sent prepaid for $2.95. Do not confuse this with ordinary printed note paper. The letters are raised. Paper is fine Vellum, sheets are full size. Choice of Black, Blue or Gold embossing, White or Gray paper, Single or Folded style. Send check, money order or currency; 20c extra west of Mississippi. Print wording to be embossed. If desired, Xmas card will be enclosed bearing your name and box shipped direct.

*Order now—don't delay*

THE COVINGTON COMPANY
Dept. R 110 West 40th Street New York

**Special Group Offer:** 3 boxes $ 8.25; 4 boxes 10.50



# Treasures You Never Can Replace

More precious than the priceless Venetian mirror are those treasures it reflects—white, smiling teeth. Protect them carefully from grit. Scouring injures thin tooth enamel which, once scratched or worn away, can never be replaced.

Colgate's Ribbon Dental Cream is a safe dentifrice. You can use it regularly without the slightest injury to the precious enamel of your teeth. Children use it willingly because of its delicious flavor.

In Colgate's a specially prepared non-gritty chalk loosens clinging particles. Pure and mild, its vegetable-oil soap gently washes them away.

COLGATE & CO.
*Established 1806*

CLEANS TEETH THE RIGHT WAY
Washes and Polishes
Doesn't Scratch or Scour

Large Tube, 25c

If your wisdom Teeth could talk they'd say, "USE COLGATE'S"

**Truth in Advertising Implies Honesty in Manufacture**

The P-A-X is similar to the Automatic Telephone equipment being so widely adopted for city service. It augments and completes, but neither supplants nor connects with local or long distance telephone service.

# Executive Control
## via the P-A-X

When your organization is equipped with the P-A-X you may know what is going on in the plant or yards without leaving your desk.

All department heads are available for telephone conversation at your will. You can talk to them individually or, by the Conference Wire, to groups of any number.

You are never delayed by wrong numbers, by busy signals, or because the man you want isn't at his desk.

A special interception circuit allows only you and other senior officials to intercept a conversation between two subordinate members of your organization and to claim priority of communication with one or the other.

If the man you want is not at his regular station, the Code Call will locate him and instantly put him in telephone conversation with you. Conducting business over the P-A-X saves time and often a needless trip to the office. It avoids the mistakes of an operator.

Our book "The Straight Line" will give you the facts on this most highly developed and complete intercommunicating telephone service known. Will you use the coupon or write for your copy?

# P-A-X

TRADE MARK

*THE PRIVATE AUTOMATIC EXCHANGE*

## Automatic Electric Company

ENGINEERS, DESIGNERS & MANUFACTURERS OF THE AUTOMATIC TELEPHONE IN USE THE WORLD OVER

HOME OFFICE AND FACTORY: CHICAGO, U. S. A.

*Branch Offices in All Principal Cities*

EXECUTIVES' COUPON—For Complimentary Copy of the Booklet "The Straight Line."

Automatic Electric Co., 947 W. Van Buren St., Chicago, Ill.

Gentlemen: Please send me "The Straight Line." N-5

Name.........................................

Title.........................................

Name of my Company.........................................

Address.........................................

# His patients can't read or write

*Then why does C. H. Barlow, in Shaohyingfu, use good paper?*

Mr. Barlow, who is a medical missionary in China, has hopes that his ship will come in. Read about one thing that he wants:

Friends:

Your stationery has given me such genuine satisfaction as an artistic expression of the spiritual refinements which come only to men who admire writing and who enjoy writing, that I wish to let you know it.

For the past fifteen years I have been leading the financially improvident life of a medical missionary in China, hence my desire to use Old Hampshire Bond does not spring from any wish to impress customers or to get business. Most of my patients neither read nor write, and those who do would not appreciate the kind of paper I use, for they have their own standards of what is aristocratic and artistic in papers, just as we have, but of an entirely different nature and pattern.

I use Old Hampshire Bond as a luxury which, while it is artistic and distinctive, is still within my reach. When my ship comes in, one of the first delights I'll add to my list of necessities will be a choice selection of fine papers. I know no better place from which to make such a selection than from your creations.

Cordially yours,

C. H. BARLOW.

Shaohyingfu, Chekiang, China.

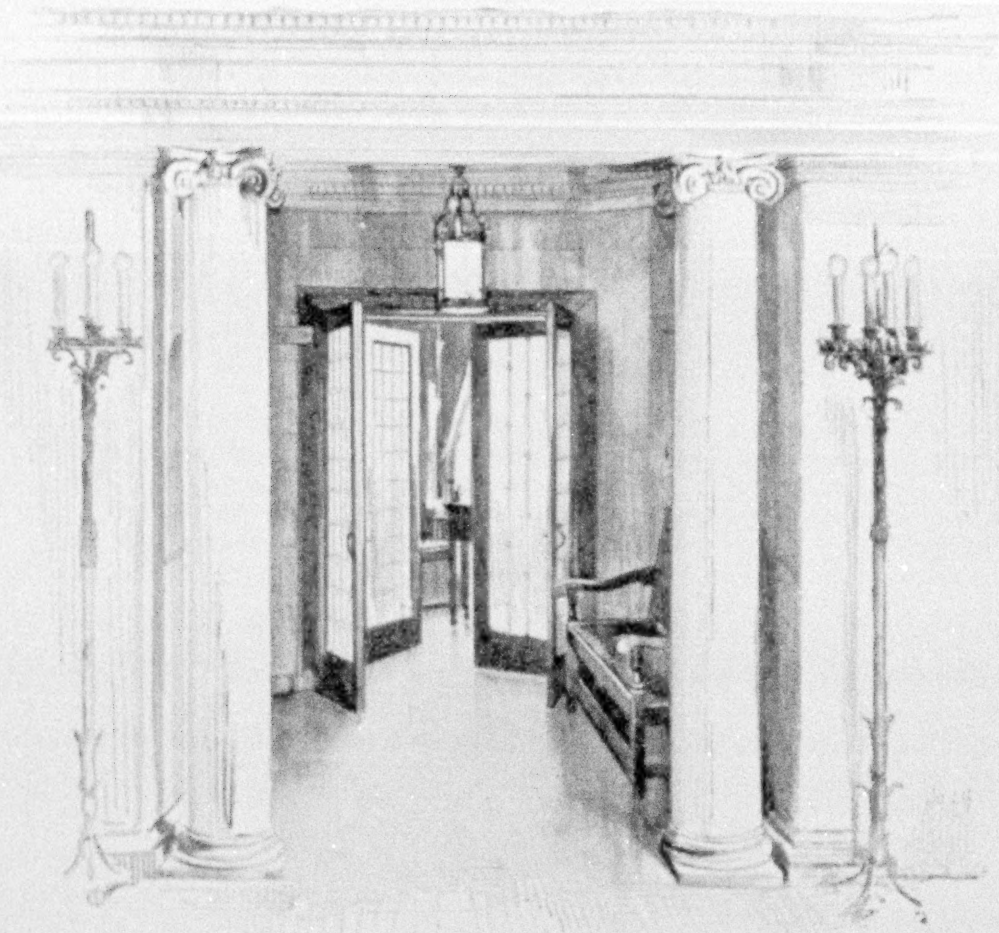
Old Hampshire Bond is one of the luxuries which have become necessities to people who love fine things. This is because really good taste impels the use of stationery fine enough to give satisfaction to the writer of a letter, as well as to its recipient. Old Hampshire Bond is pre-eminently such a paper.

*A generous sample of Old Hampshire Bond will be sent you if you will write us on your business letterhead.*

## Old Hampshire Bond

Hampshire Paper Company — Old Hampshire Bond — South Hadley Falls Mass.

*Also makers of Old Hampshire Stationery for Social Correspondence*



The
FIFTH
Avenue
Building
200 Fifth Ave.
New York

# *Your New York Office*

WHATEVER the nature of your business, environment is an important asset. There is no more certain road to success than the atmosphere of progress.

You have it here in The Fifth Avenue Building. Tenanted by leaders in commercial, professional and philanthropic activities, The Fifth Avenue Building is associated with conspicuous success.

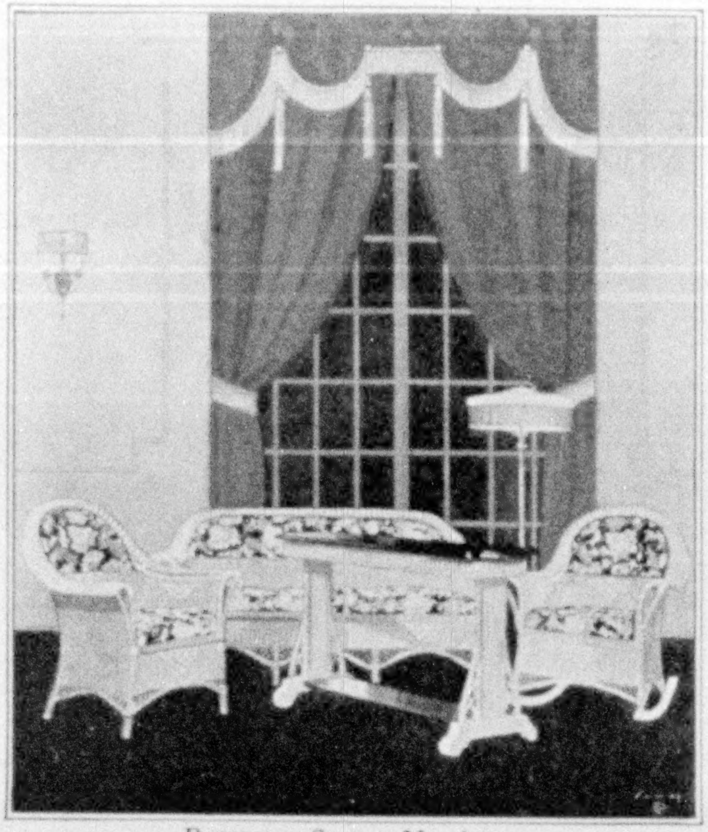
Many of the tenants have furnished their offices in a style in keeping with the high standing of their business. Above is pictured the entrance to a beautifully appointed suite of offices. Finished in antique marble with its suggestion of ancient splendor, it is probably as fine an example of office interior as will be found in New York. It is the New York headquarters of an out-of-town manufacturer.

Besides the convenience of direct access from the building to subway connecting with railroad terminals and all other parts of the city, tenants enjoy the prestige of a world-known location.

THE FIFTH AVENUE BUILDING

Broadway and Fifth Avenue, at Madison Square, New York

*"More than an office building"*



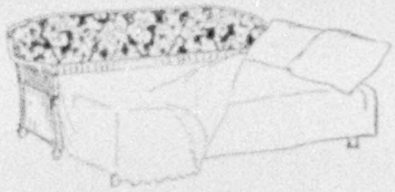
PATRICIAN SUITE—No. A-100
*A new and exclusive Randall Gold Band Reed Suite*

*The Vogue* of a new and delightful American Period in Reed and Fibre Furniture is here. New standards of beauty, comfort and cheer have been established for the home.

A wide variety of suites, davenport beds, and single pieces, with choice of color and covering, have been designed to harmonize with every decorative scheme and every style of architecture, even to the pure colonial.

For city and country clubs, for rest rooms, recreation rooms, and business or professional reception rooms, Randall Gold Band Reed and Fibre furniture strikes a note of charming grace and comfort hitherto unattainable. See it at the better stores or write for the facinating book "The New American Period in Furniture."

A. L. RANDALL COMPANY, Chicago, Ill.



Ambassador Fibre Davenport Bed
An exclusive Randall Gold Band Style

*Furnish with*

RANDALL *Reed & Fibre*

Furniture

TRADE MARK

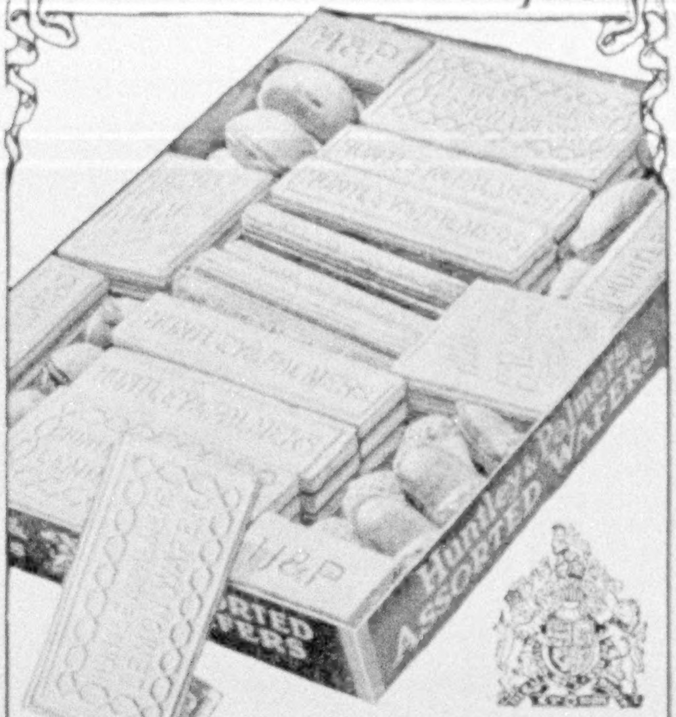
THE ONLY FURNITURE TRADE-MARKED WITH THE GOLD BAND OF QUALITY

*Copyright, 1923, by A. L. Randall Company.*



# THE SWEETMEATS OF KINGS

***Delicious Assorted Wafers***




By Appointment to
George V
and the Royal Households of Europe

Huntley & Palmers biscuits are jewels in the realm of bakery.

To taste these assorted biscuits is to marvel at the product of the world's master-chefs. Between crisp, golden wafers are ten flavors—layers bursting with indescribable goodness.

Really, the Sweetmeats of Kings; for each tiny morsel was prepared with the same exacting skill as the famous wedding cake made for H. R. H. the Duke of York, K. C., and his bride.

# HUNTLEY & PALMERS

***World Famous***

**BISCUITS**

If high-grade grocers cannot supply you, send for

SPECIAL PACKAGE **$1.00** AS ILLUSTRATED CHARGES PREPAID

*Ridgways Tea Company*

60 Warren Street — New York, N. Y.

# Shop With a Chevrolet

*for Economical Transportation*

CHEVROLET

Chevrolet Utility Coupe is proving a wonderful help to many housekeepers, more than paying its low cost of upkeep through economies of time, and money saved in cash-and-carry shopping.

Shopping that once employed a tiresome half day, can be accomplished with ease and pleasure in an hour with the Utility Coupe. The big rear compartment holds all the bundles and packages that would make up a week's supply.

Our Free Shopping List Pad can be had from the nearest Chevrolet dealer. Hang it in the kitchen. Check articles to be bought. Tear off top sheet when you go shopping. When one pad has been used up, any dealer will be glad to give you another.

The Chevrolet Utility Coupe is also a great favorite with women for social and general purposes. Every family needs a closed car of this type and quality.

## Chevrolet Motor Company

*Division of General Motors Corporation*

Detroit, Michigan

*Dealers and Service Stations everywhere. Applications will be considered from high-grade dealers only, for territory not adequately covered.*

*Prices F. O. B. Flint, Michigan*

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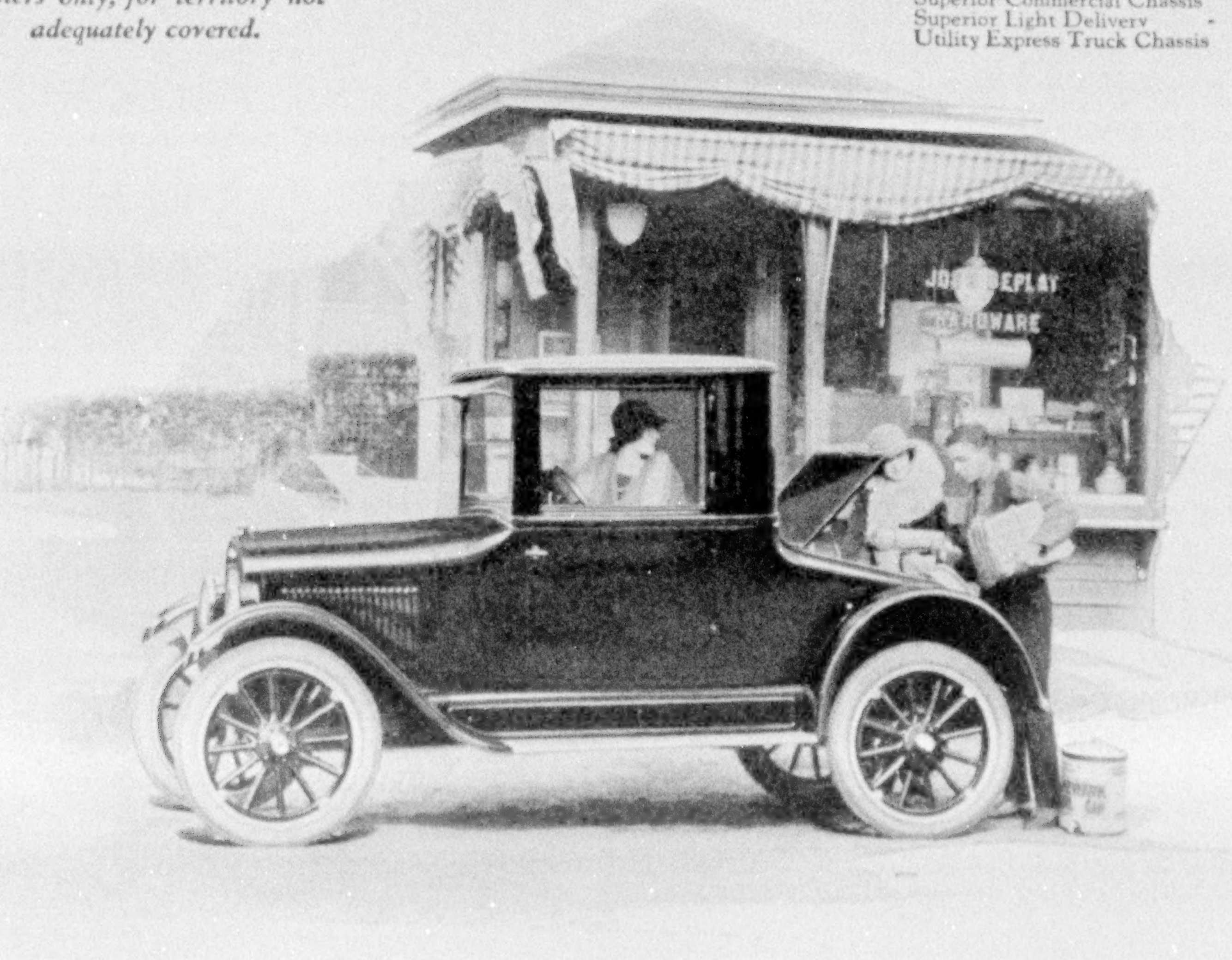
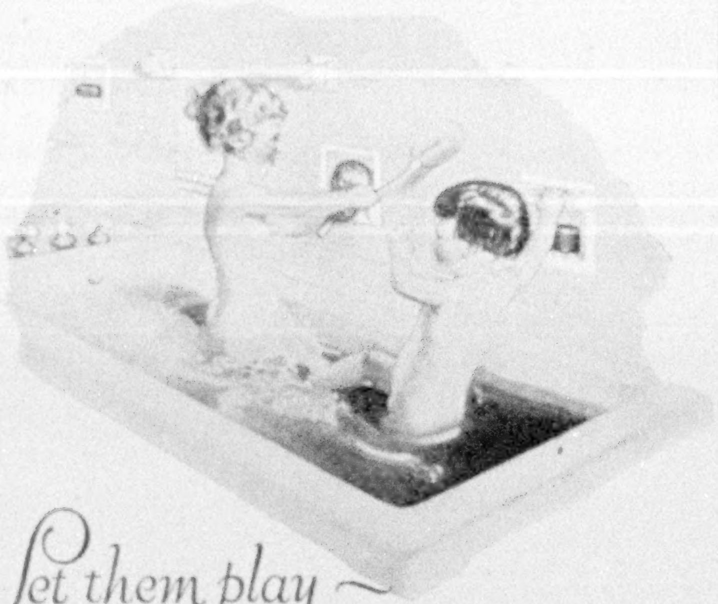
|---|---|
| Superior Roadster | $490 |
| Superior Touring | 495 |
| Superior Utility Coupe | 640 |
| Superior Sedan | 795 |
| Superior Commercial Chassis | 395 |
| Superior Light Delivery | 495 |
| Utility Express Truck Chassis | 550 |





Let them play — Fairfacts Fixtures are out of the way

BOYS and girls or bigger folks . . . we all like to splash around . . . and it's so much nicer now . . . no bumped heads, elbows or shoulders . . . no upset soap dishes. Fairfacts Fixtures are out of the way . . . built right in the bathroom walls.

Let us send you a charming little booklet, "The Perfect Bathroom," illustrating the wide variety of Fairfacts Built-in Fixtures, including various models and sizes of soap dishes . . . tumbler holders . . . toothbrush holders . . . towel racks . . . shelves . . . paper holders . . . sponge holders . . . safety grips and many combinations that add the last touch to your comfort.

*Look for this* BATHROOM Fairfacts FIXTURES *trade mark*

**Fairfacts Fixtures**

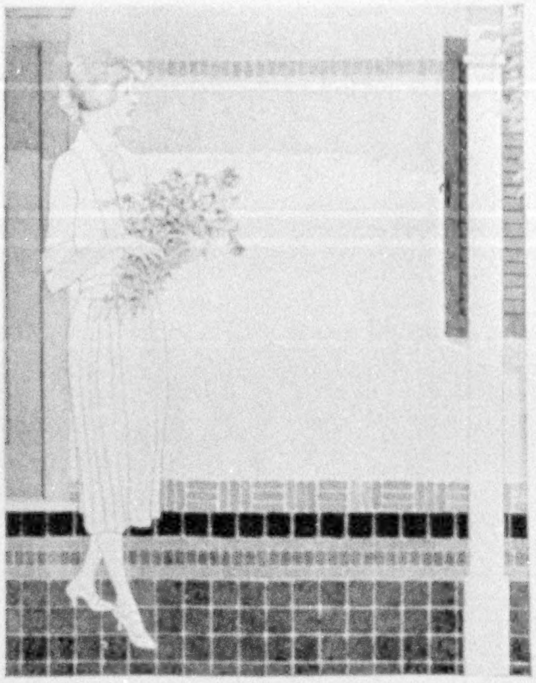
BUILT IN YOUR BATHROOM WALLS

THE FAIRFACTS COMPANY, Inc.
234-236 W. 14th St., Dept. N,
New York City,

Kindly send me your booklet "The Perfect Bathroom." I am interested in (remodeling) (building) my home and particularly my bathroom.

*Name*..........
*Address*..........
*City*.......... *State*..........





BEAUTIFUL, COLORFUL

**TILES**

For the porch, Tiles have a double value. Because they are weather-proof and indestructible, they are most practical. They cannot warp or fade. As long as the building stands they retain their original beauty. No refinishing, no replacing. The cleaning is simplified, too.

*Consult your architect and dealer about Tiles, or write to*

Associated Tile Manufacturers
350 7th Ave., Beaver Falls, Pa.



**A Garden Full of Darwin Tulips for $2.00**

In anticipation of again placing before our customers a collection of Darwin Tulips we have had a sufficient quantity grown so that we can offer

**50 Giant Darwin Tulip Bulbs, Finest Mixed, for $2.00**

*selected from fifteen named varieties*

Few spring flowering plants rival the Darwin Tulip for brilliance of bloom. Borne on strong stems often exceeding three feet. They are a wonderful addition to the flower garden.

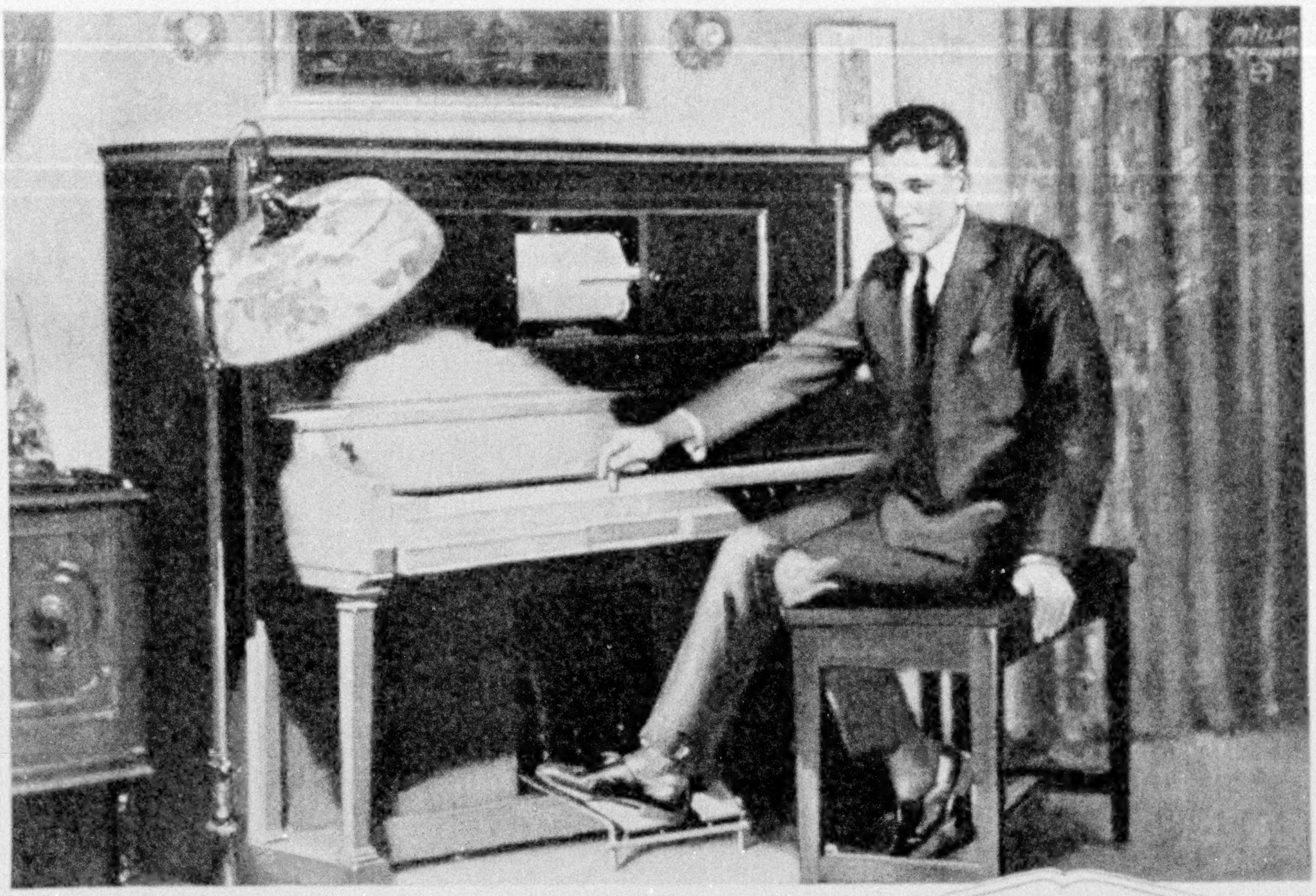
**Plant any time before the ground becomes frozen, and they will bloom from the middle of May to Decoration Day**

Mail this advertisement, or present at our store, with check, money order, cash or stamps and secure this exceptional collection, sent prepaid to any point in the U. S. east of the Mississippi. For points west and Canada add 25c ($2.25.)

*Our 1923 Fall Bulb Catalogue sent on request*

Stumpp & Walter Co

30 and 32 Barclay Street New York



## A Heaping Measure of Pleasure—with the Gulbransen

Picture a beautiful Gulbransen in your home, and *you* playing it!

Picture yourself playing, through the pedals, with the "touch" of a musician!

Picture the keys being *pressed* down, as in hand playing!

*Pressed* down, not *knocked* down. There's one of the secrets of Gulbransen superiority. It removes all suggestion of the mechanical and gives you real, intimate, personally-produced music, full of genuine expression.

Because the Gulbransen *is* a Registering Piano, registering your exact touch and expression—because it *is* different from any player-piano you have ever known—because it *is* so remarkably easy to pedal—your first delight will develop into continued, year-after-year interest.

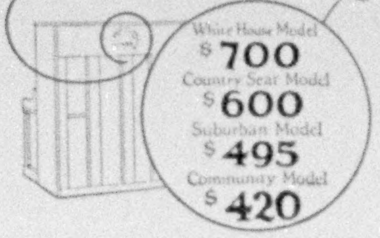
You'll be a Gulbransen "fan"—you'll be enthusiastic, entertaining, and—mark this statement, proved by the experience of thousands of folks who have Gulbransens—*you and your family will get more pleasure out of your Gulbransen than anything you now possess.*

*To play correctly: four splendid Instruction Rolls furnished without extra cost*

GULBRANSEN-DICKINSON COMPANY, *Chicago*
*Canadian Distributors:*
Mutual Sales Service, Limited, 79 Wellington St. West, Toronto

© 1923 G-D Co

*Nationally Priced*
Branded in the Back



White House Model $700
Country Seat Model $600
Suburban Model $495
Community Model $420

**Dealers!**

The Gulbransen offers a remarkable opportunity in a clean-cut, Nationally-Advertised, Nationally-Priced line. Write for particulars.

Gulbransen Trade Mark
*"Easy to Play"*

**Send This Baby for a Baby**

CHECK COUPON

☐ Check here if you do *not* own a piano.
☐ Check here if interested in having player action installed in your piano.

Write name and address in margin. Mail to GULBRANSEN-DICKINSON COMPANY, 810 N. Kedzie Avenue, Chicago, Ill.

*(Pronounced Gul-BRAN-sen)*

# GULBRANSEN
## The *Registering* Piano

*Registers* YOUR TOUCH • *Registers* YOUR TIME • *Registers* YOUR EXPRESSION • *Registers* YOUR INDIVIDUALITY

## For a cool, clean smoke

You will find added enjoyment in your favorite brand, when the smoke is drawn, smooth and fragrant, through a mouthpiece of genuine

**BAKELITE** *or* **REDMANOL**

This unique material is tasteless and non-absorbent. In the golden yellow shades it is hardly to be distinguished from the finest amber—but it is not fragile. Its other colors include ruby, emerald, jet and amethyst.

All of the better known makers of pipes and holders are furnishing these articles with mouthpieces of Bakelite or Redmanol. Stop in at any tobacco shop and ask to see them.

BAKELITE CORPORATION
8 West 40th Street, New York

BAKELITE
REDMANOL
are the registered Trade Marks for the Phenol Resin Products manufactured under patents owned by
BAKELITE CORPORATION

THE MATERIAL OF A THOUSAND USES

## This 5 Room House—only $1165

THIS model—the Albany—is one of the most desirable low-priced Bossert houses you can get. Thousands of families who are now living in it find it wonderfully comfortable, convenient, substantial, and attractive as an all-year-round residence.

It comes to you direct, with all lumber cut to fit, for $1165—or, sectional, ready to erect, at $1650. All lumber, windows, doors, roofing, hardware, paint and plaster boards included in these low prices, which are possible only because of the quantity production at the vast Bossert plant.

*Send for the Bossert Book of Homes!*

The Bossert Catalogue illustrates and describes in detail this Albany model and many other charming and attractive homes, from simple bungalows to elaborate estates. It shows plans and pictures and is full of practical information for home-builders. Send 20 cents for this book today.

LOUIS BOSSERT & SONS, Inc.
1313 GRAND STREET BROOKLYN, N. Y.

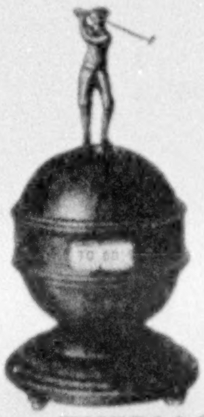
*When building, be sure to get Bossert's prices on lumber and trim*

**BOSSERT HOUSES**

## A Handsome Gift for a Man

You know a man who would be delighted to receive this substantial and handsome Ash Tray with cigar rest and match stand; five-inch bowl and Dutch design in silver. Just the gift that will please a smoker and will last a lifetime. Sent postpaid, only $5. Ask for No. 4676. If you take special pleasure in making attractive out-of-the-ordinary gifts, send for our illustrated Year Book containing more than 600 suggestions, including thoughtful, useful, novel and whimsical things for children and grown-ups and for every gift occasion. It is free. Write for it.

POHLSON GIFT SHOPS, Dept. 99, Pawtucket, R. I.



## Therm-o-Dial
THE ART THERMOMETER

An ornamental, distinctive, practical thermometer that will appeal to refined folks seeking something unique in a Christmas gift.

GOLF MODEL
(as illustrated)
INDIAN MODEL ALSO
OTHERS $4 to $10

**$7.50**

*Booklet on request*

THERM-O-DIAL LABORATORIES
127 Sussex Avenue Newark, N. J.

## *To People Who Go About*

AMONG your hostesses,—which impress you most? Those who plan so that the climax comes in a dinner-table correctly presided over! Which impress you least? Those who plan everything *but* the dinner-table, and press into service a miscellaneous conglomeration of silver!

The home's final expression of correctness is a dinner service developed in International Sterling. Each piece is wrought from everlasting solid silver. Each design is inspired by ever-living classic art.

For those who love delicacy—the Georgian Maid Design. For those who love massive richness—the Trianon Design. Consult with your jeweler about developing a service in one of these designs.

Or, write for books which show them complete. Dept. 160, International Silver Company, Meriden, Connecticut.

*Georgian Maid and Trianon are stamped* (I.S.CO.) (STERLING) *which identifies the genuine*

# INTERNATIONAL STERLING

*Masterpieces of the Classics*

**INTERNATIONAL SILVER CO.**

# KIMBALL

*"The Instrument of Yesterday, Today and Tomorrow"*

AS JEAN DE RESZKE, operatic idol of yesterday, chose a KIMBALL for his personal use, because of its beautiful singing quality of tone—so Charles Marshall, now acclaimed the most heroic figure among heroic tenors, gives expression to his approval of the incomparable KIMBALL—the instrument of imperishable fame.

KIMBALL

*Grand Pianos*
*Upright Pianos*
*Player Pianos*
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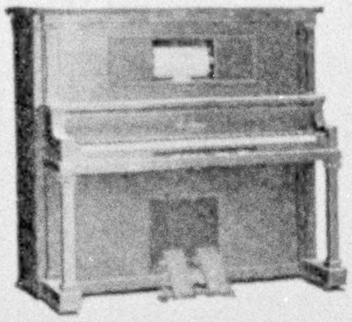

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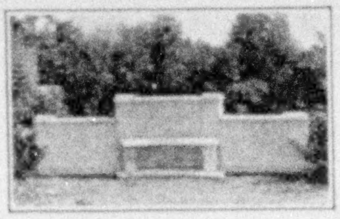

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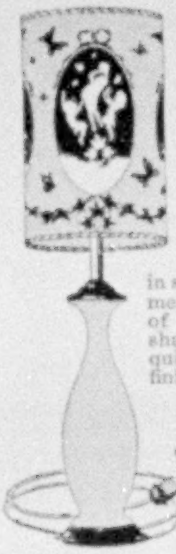

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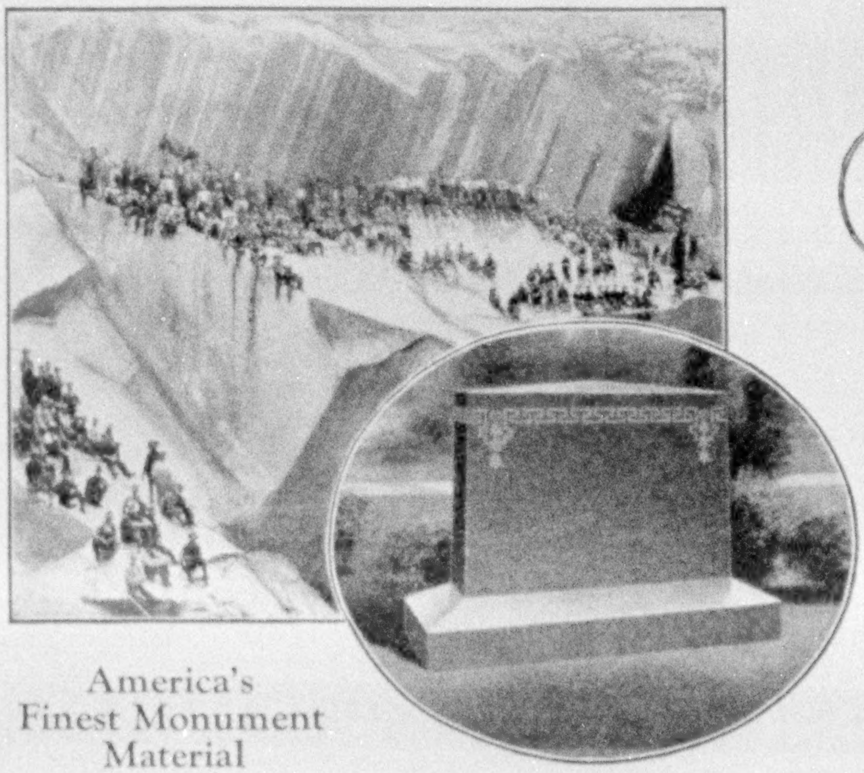

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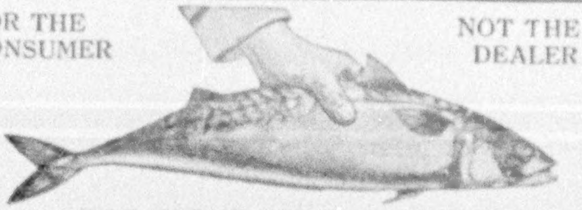

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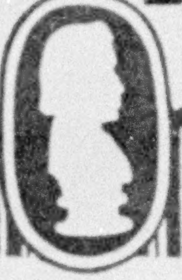

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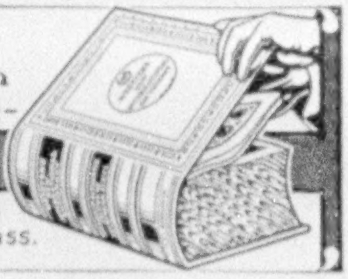

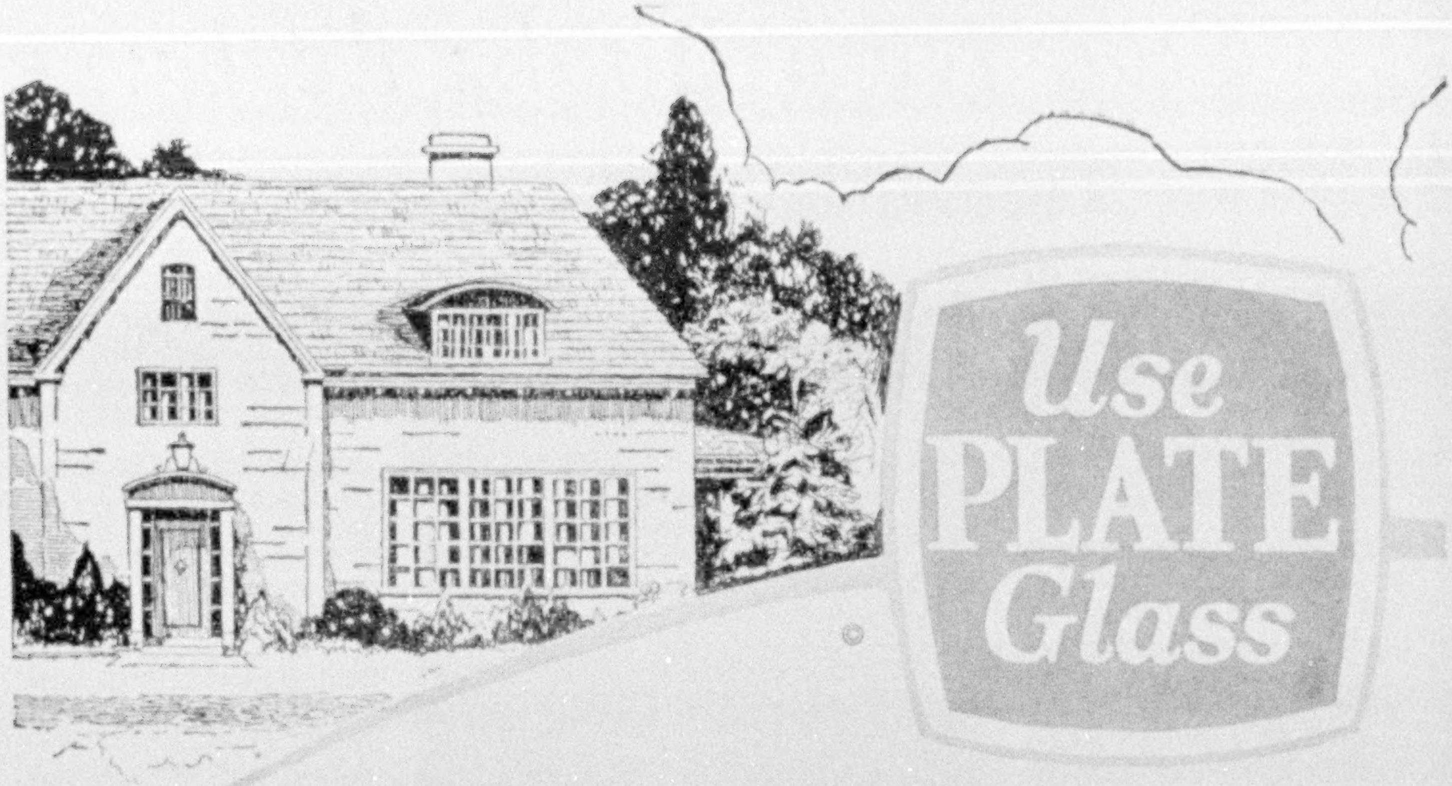


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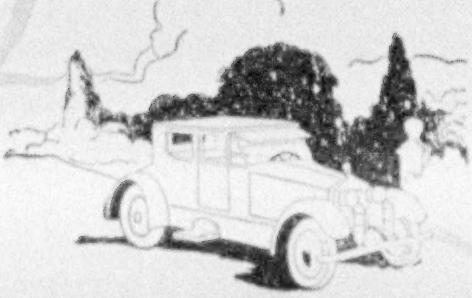

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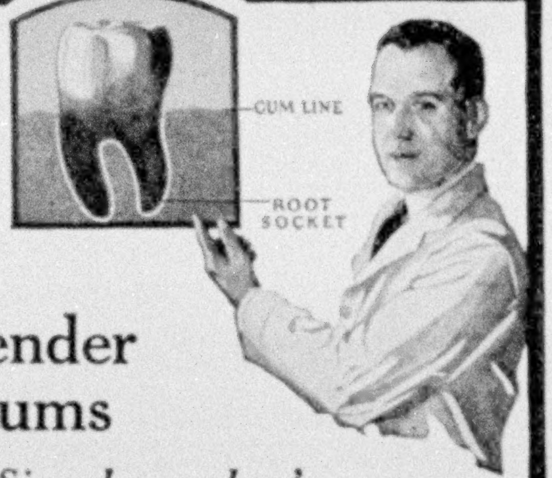


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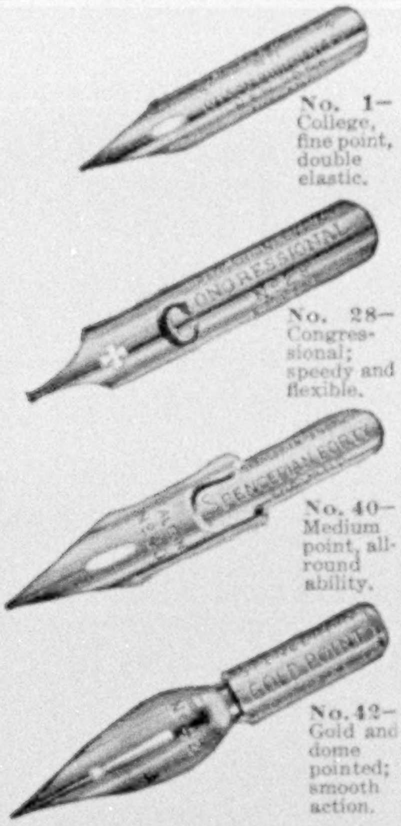

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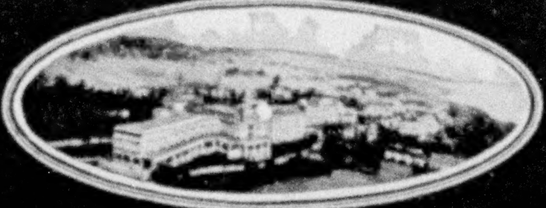

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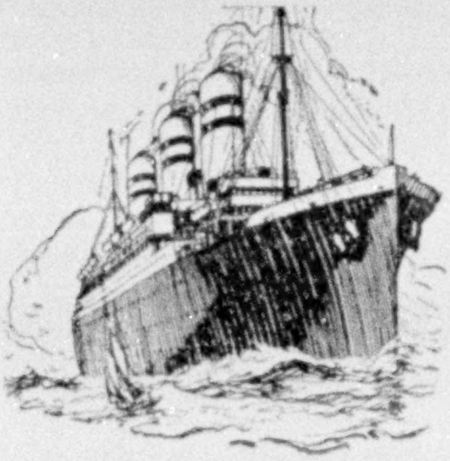

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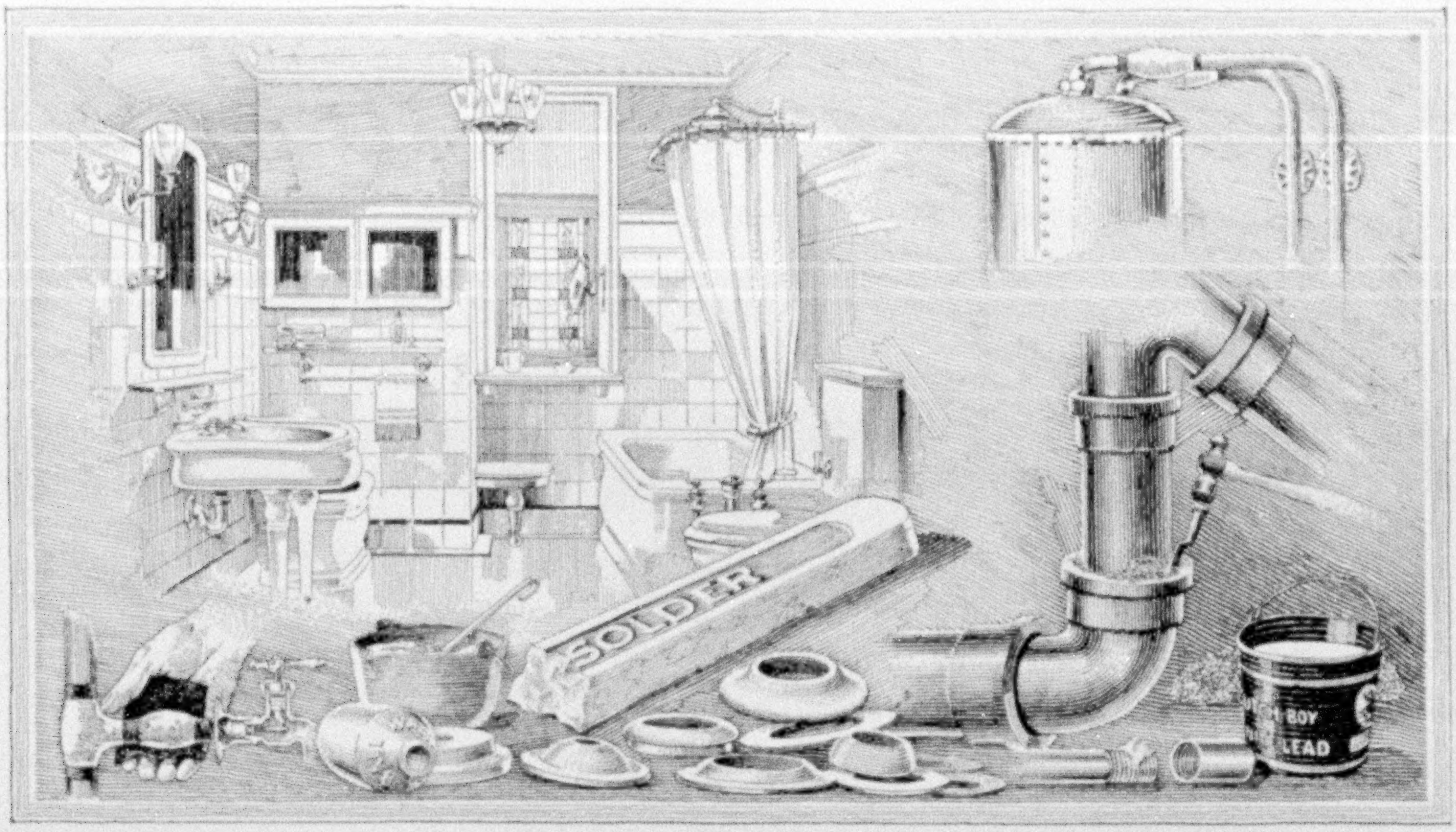


# Lead helps to guard your health

YOU wouldn't live today in a house without an adequate plumbing system. For without modern plumbing, sickness might endanger your life.

Lead concealed in the walls and under the floors of many modern buildings helps to give the best sanitation.

### *Lead pipe centuries old*

Lead, therefore, is contributing to the health, comfort, and convenience of people today as it did when Rome was a center of civilization. Lead water and drainage pipes more than 1800 years old have been found in exactly the condition they were in when laid.

In some cities today the law specifies that lead pipe alone may be used to bring water from street mains into the building.

In drainage systems are lead traps made of lead pipe bent into the shape of the letter S, so that a little water will stay in the bend and prevent gases which collect in the pipe from getting out through the house.

The malleability of lead also makes it easy to change the direction of any pipe through the use of lead bends.

### *Joining the pipes*

A plumber easily "wipes" a joint or repairs a pipe leak with lead and tin solder. Because this alloy melts at the low temperature of 358 degrees it can be applied without melting the lead pipe, which melts at 620 degrees.

Lead is also poured into the flanges of pipe-joints to make them absolutely tight. Pipe threads are painted with white-lead or red-lead to make a tight connection. Where vibration or movement of pipes may loosen a poured joint, lead wool is used; lead shredded into threads is packed into the joint in a dense, compact mass.

"Save the surface and you save all"

Rubber gaskets and ball washers containing lead prevent leaking at joints and faucets.

Lead is used to beautify the modern bathroom. Red-lead and litharge, both lead oxides, are important ingredients in making the glossy white enamel covering the iron bodies of tub and basin and the glazed tile walls.

### *Lead in paint*

While lead is invaluable in assuring comfort and proper sanitation, its best-known and most widespread use is as white-lead in paint. Such materials as wood would soon deteriorate unless protected with paint. And the paints that give the most thorough protection against the weather are based on white-lead.

The loss of invested capital through failure to protect the surface of property adequately has led property owners to paint frequently and well. As days and months go by, more and more of them are learning the wisdom of the phrase, "Save the surface and you save all." And they are using white-lead paint to prolong the lives of their houses.

### *Look for the Dutch Boy*

NATIONAL LEAD COMPANY makes white-lead and sells it mixed with pure linseed oil, under the name and trade-mark of *Dutch Boy white-lead*. The figure of the Dutch Boy is reproduced on every keg and is a guarantee of exceptional purity.

Dutch Boy products also include red-lead, linseed oil, flatting oil, babbitt metals and solder.

### *More about lead*

If you use lead, or think you might use it in any form, write to us for specific information.

## NATIONAL LEAD COMPANY

New York, 111 Broadway; Boston, 131 State St.; Buffalo, 116 Oak St.; Chicago, 900 West 18th St.; Cincinnati, 659 Freeman Ave.; Cleveland, 820 West Superior Ave.; St. Louis, 722 Chestnut St.; San Francisco, 485 California St.; Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Ave.; Philadelphia, John T. Lewis & Bros. Co., 437 Chestnut St.

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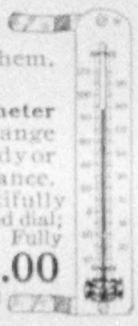
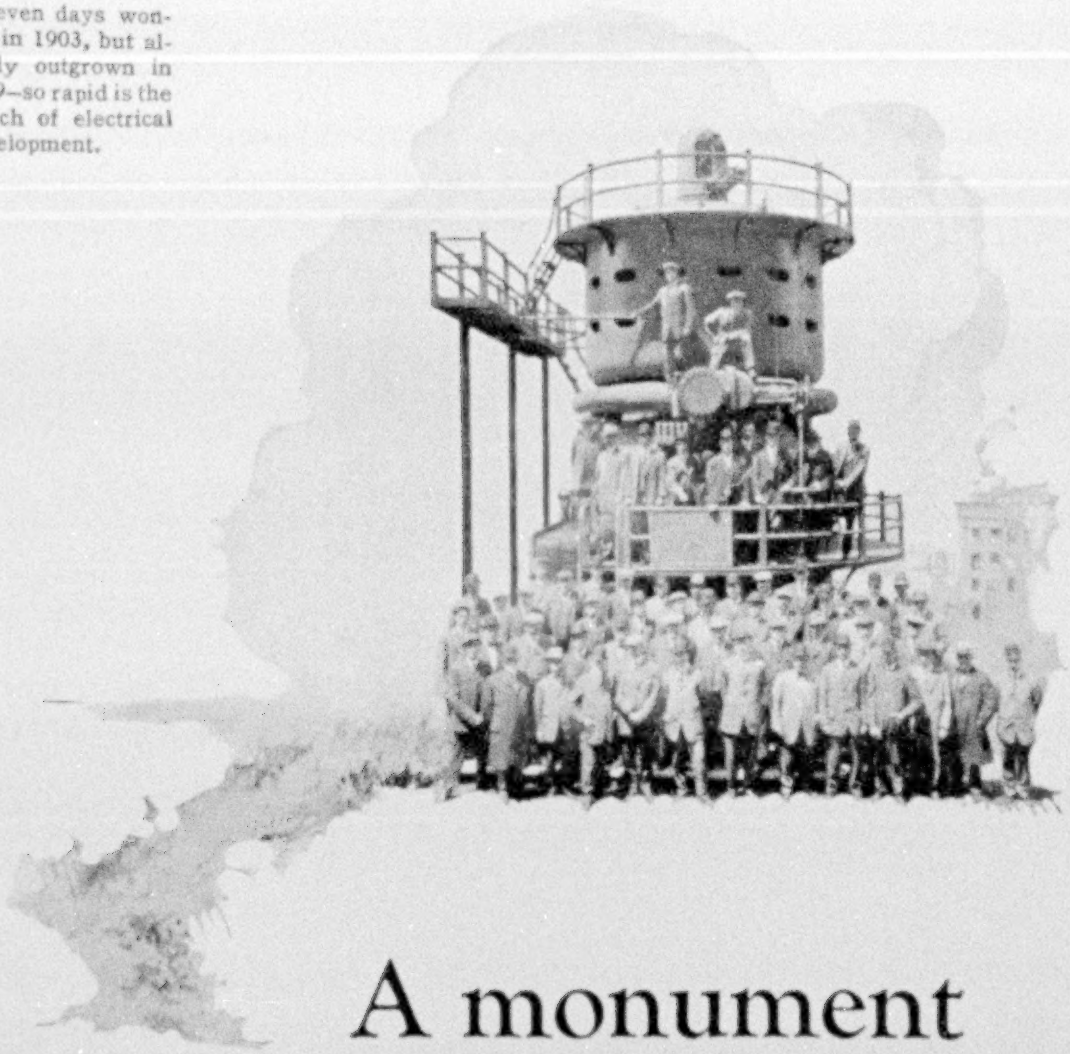


*Agents wanted*

DAVID WHITE, Dept. 110, 419 E. Water St., Milwaukee, Wis.

A seven days wonder in 1903, but already outgrown in 1909—so rapid is the march of electrical development.



# A monument to courage

This machine is a Curtis Steam Turbine Generator. Many called it a "piece of folly" in 1903. It was the largest turbine generator ever built up to that time.

Today General Electric Company builds steam turbine generators ten times as big as this pioneer; and the "piece of folly" is preserved as a monument to courage.

The total capacity of the steam turbine generators produced by the General Electric Company is equal to the working power of 170 million men. More and more the hard tasks of life are being transferred from human shoulders to the iron shoulders of machines.

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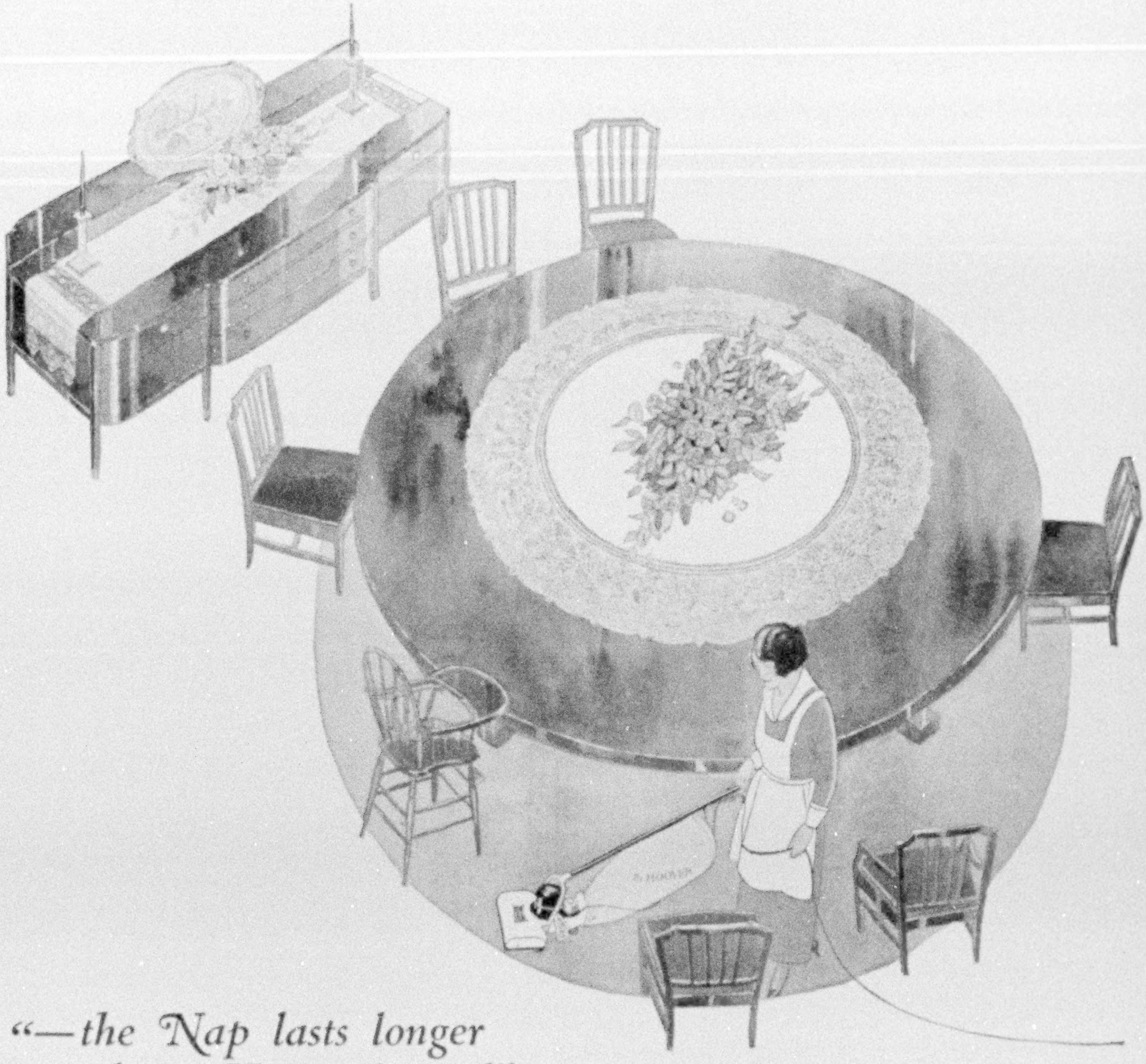

"—the Nap lasts longer when a Hoover is used"

In the attractive home of Mr. and Mrs. Robert P. Roe at 25 Piedmont Court, Piedmont, California, the floors are softly carpeted by a dozen rugs—Orientals, Wiltons—all in excellent condition today because, *for twelve years*, they have been regularly beaten, electrically swept and air-cleaned by The Hoover.

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"I have had people who don't own Hoovers tell me that vacuum cleaners wear off nap," relates Mrs. Roe. "I tell them my experience of twelve years has been that the nap lasts longer when a Hoover is used."

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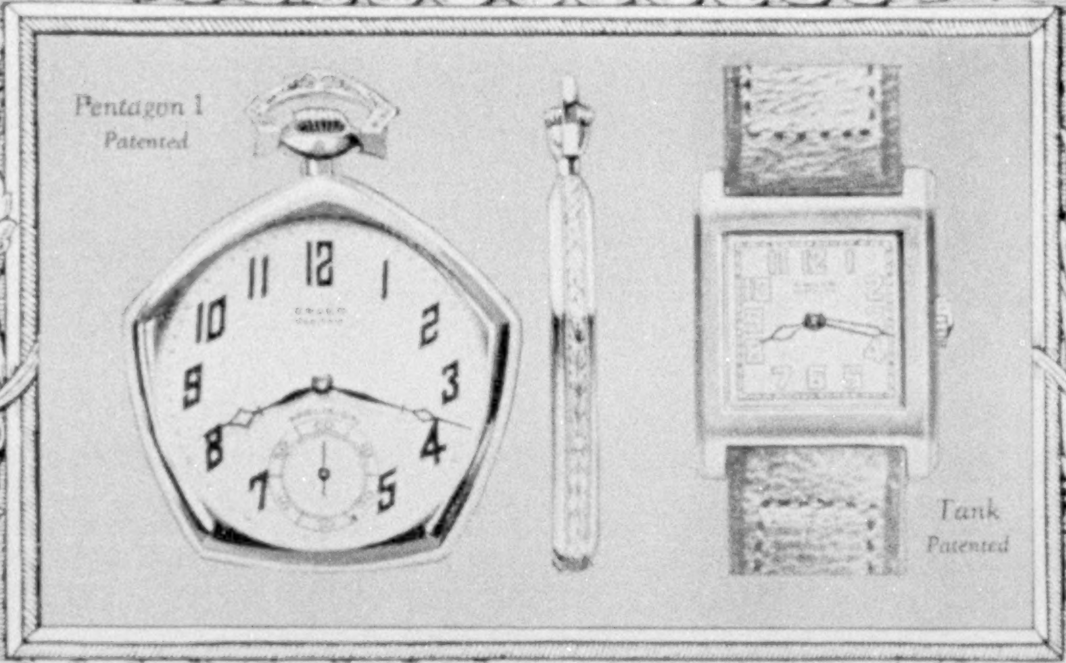


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The Tank model, in solid green or white gold, with its 17 jewel *Precision* or *Extra Precision* movement, is the Gruen Guild's sturdy new strap watch for men.

Through a new manufacturing process its odd-shaped crystal has been so standardized that it is easily replaced. Its detachable strap may be quickly changed for a new one.

Both the Pentagon and the Tank bear the Guild's mark "Precision," the pledge of highest service. Fashioned slowly out of flawless materials and carefully hand-finished, each becomes a valued gift for the man who is a judge of fine things. Sold *only* through good jewelry stores. Look for the Gruen Service Emblem.

Every Gruen Watch is backed by the complete American Service of the Gruen Workshops on Time Hill, Cincinnati, a service available to you through the jeweler.

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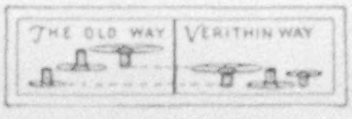
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